GAS JOURNAL, MAR. 26, 1947

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PROTECTION

PARLIAMENT has always insisted—as indicated in an article by one who writes with authority and long experience in the Gas Industry, published in our issue to-day—on safeguards to protect users of gas, and the sound financial structure of the Industry has hitherto afforded protection to its owners. A large percentage of those owners, as Mr. A. M. Paddon remarked at the Brighton, Hove, and Worthing Gas Company's meeting, are not "very important" or "very rich" individuals, but humble folk of limited means. Indeed, Mr. E. C. Woodall, at the Tottenham meeting yesterday, showed that two-thirds of the stockholders hold less than £100 worth of stock—not rich speculators but ordinary thrifty people who, not seeking sensational returns, have been content to invest their savings in an undertaking which they trust to provide a modest but safe return on their money.

If principles similar to those proposed in the Electricity Bill are to be incorporated in any Bill to nationalize the Gas Industry, these humble folk are likely to sustain a serious diminution in their income. How this is likely to come about is discussed in a second article by our distinguished contributor which we hope to publish next week. We will not anticipate his arguments except to say that in an Industry of such sound structure there should be as much "protection" for those who own it as for those who use its products.

There is another aspect, to which Mr. J. E. Cowen called attention at the annual meeting of the Newcastle and Gateshead Company. The Gas Industry can claim more generous treatment than the electricity industry since its undertakings, unlike electricity undertakings, are not open to compulsory purchase by local authorities, nor could it be claimed that the systems of dividend control applicable to the Gas Industry require further tightening—indeed the contrary is the case. If the method of compensation to proprietors set out in the Electricity Bill should be applied, unaltered, to the Gas Industry, an income from the Newcastle Company's ordinary stock of £5 7s. 6d. per year would be reduced to about £3 7s. per year, without any gain in the capital value of the investment. To suggest that current Stock Exchange quotations represent the real value of shares overshadowed by the prospect of nationalization, is fictitious; while the alternative offer of pre-election prices is valueless unless the stock offered in compensation is similarly based upon the levels of Government securities at the same pre-election date. This is evident when one reflects that had a proprietor of Newcastle Company—we quote this merely as an example—sold his stock and bought 2½% Consols (both at pre-election prices), he would have obtained, in exchange for an income of £5 7s. 6d. one of £4 per anum, and by to-day would see a capital appreciation of some £25 on the selling price of his original £100 of Newcastle Gas stock.

ASH AND CARBONIZATION

THE subject of low-ash coal, with which the name of Dr. Lessing will always be associated, is raised again by an article contributed to this issue of the "JOURNAL" by a special contributor, who, we hasten to state, is not Dr. Lessing himself. It is now some 20 years since Dr. Lessing experimented upon the cleaning of coal by calcium chloride and erected two washeries based on that principle. This was at the time a considerable advance in the practice of coal cleaning in that it made possible the production of really low-ash coal. The system did not come in general use for reasons which need not be discussed here. Improvements have been made in coal cleaning practice and it is no longer necessary to use calcium chloride to produce low-ash coal. From the carbonization angle, the experiments made at the Tottenham Gas Undertaking's works in or about the year 1930 have been the only recorded instance of numerical results on a large scale from clean coal. It is time that these experiments were repeated on a larger scale and for a longer period. It is understood that the Gas Research Board has plans for an extended trial of this nature, but it is not known how far these plans have become nearer to being put into practice. Conditions are very different from those obtaining in 1930 and a re-assessment of the position and effect of clean coal on carbonization practice is due.

The coming of the National Coal Board must affect the position considerably. The report of the Fuel and Power Advisory Council on Domestic Fuel Policy is another event that must be taken into account. The Gas Industry is, and will remain for some considerable time to come, a two-fuel industry. Coke can hardly be classed as a by-product, and one effect of the Domestic Fuel Policy report must be to put the all-gas policy into its proper perspective. That report indicated clearly that while gas (and electricity) should continue to take a great deal of the domestic load, especially gas for water heating with summer space heating, the great winter peaks must be met by solid fuel because they can only be met satisfactorily by a fuel that can be stored. How far coke would meet this need is not certain. The report suggests that it might not be found to meet it wholly because of the need to erect vast new carbonizing plants, a development that might lead to difficulties with electrical generating station economics. Moreover, the labour and material difficulties of erecting new carbonizing plant on the required scale might be considerable. In these circumstances, the Council examined the anthracite position and found that considerable quantities of anthracite could be mined in addition to those now available. This would mean sinking more pits. It would involve additional labour in the mines. But the amount of anthracite (and presumably other smokeless coals) available could be increased by an additional 20,000,000 tons. Those figures were given by Lord Simon at the October Conference, "Fuel and the Future." Not all of this additional 20,000,000 tons would be suitable for domestic appliances, of course. The general pic-

ture then is that quite a fair proportion of the requirements for solid smokeless fuel will be met by anthracite; that it will be many years before sufficient anthracite is available for that purpose; and that in the meantime it is desirable that the coal carbonization industries shall take all possible steps to narrow the gap between the demand for solid smokeless fuel and the amount available by increasing the output of town gas and coke.

It should here be made clear that although the Fuel and Power Advisory Council's report was a report only, it is in process of being implemented. The report has been accepted in principle by the Government; that much is made clear by the Government's own publication, *Fuel Efficiency News*. There is no question that this is just another report to be pigeon-holed. The policy of the Gas Industry can be based solidly on the fact that it is being implemented and that the Ministry of Fuel and Power, and the other Government Departments concerned, are resolved to bring about the abolition of smoke.

THE POSITION TO-DAY

THUS, the position is that the demand for smokeless fuel is at last to be officially encouraged and that through the National Coal Board the Government can control the sale of bituminous (and other) coal, diverting each coal into channels for which it is suited without disturbing the economics of individual colliery concerns. This is one of the positive values of nationalization of the coal industry. It is further known that the Government will encourage the Gas Industry to develop its sales of gas and coke. But it is also clear that the sale of coke will not be encouraged without competition, and gas coke will have to face strong competition from anthracite. Anthracite has its disadvantages as an open-grate fuel. Those disadvantages can no doubt be reduced or eliminated by a suitable design of grate. But unless gas coke is up to the same high standard of low ash and ready combustibility as anthracite, it will not be welcomed by the householder. It is therefore of more importance than ever before that coke should be improved not only considerably, but quickly. Failure to do so now will enable the anthracite-producing mines to secure a long lead over carbonization works as the purveyor of solid smokeless fuel.

The demand for solid smokeless fuel is considerable. Lord Simon has pointed out that to-day we use for domestic purposes about 85% of solid fuel and 15% of gas and electricity. In some 20 years' time he expects those percentages to be changed to 70% for solid fuel and 30% for gas and electricity. This means that the market for solid fuel must and will remain unless the Gas Industry can discover a means of manufacturing gas which can be started up at short notice and sufficiently low in capital costs to enable plants of considerable size to be kept idle for seven months in the year. It seems unlikely that any such discovery will be made. We must, therefore, base our plans on a continuance of solid fuel as the principal domestic fuel in this country. Naturally, this conclusion ignores the possibility that atomic energy will be produced so cheaply and in such profusion that it can be used for the purpose; again, however, there would be the same difficulty that vast amounts of capital must be idle during the summer, spring, and early autumn. We may, then, confidently look forward to a very greatly increased demand for solid smokeless fuel.

Under these conditions, the possibility of using clean coal in the Gas Industry must be re-examined. The earlier experiments have left doubts concerning the economics of the practice; those doubts can be resolved quite simply—though with considerable labour—by large-scale trials and sound costing. It is no longer the price per ton of the low-ash coke which is the important factor. We remember that when Dr. Lessing read his Paper on the Tottenham experiments in 1931 ("GAS JOURNAL," June 10, 1931), Colonel H. C. Smith indicated possible difficulties in selling low-ash coke at a shilling or so more than normal coke. Constant increases in the price of coal and coke have deadened our feelings against the pain of paying through the nose for anything; the most important thing is that whatever is bought shall be suitable and usable with the minimum of trouble and work. It is therefore of the first importance to produce a good article. The 1930 experiments, as confirmed in Mr. Gardiner's Institution Paper last year, appeared to prove that low-ash coke burned better and with a higher rate of radiation than normal coke. It certainly leads to much less trouble in cleaning the fire.

A SIGNIFICANT OBSERVATION

ONE very important observation of 1930 was that the percentage of large coke from clean coal is greatly increased as compared with the yield from normal coal, and the proportion of breeze made is halved. In view of the urgency of preventing the production of breeze, a problem on which the National Federation of Gas Coke Associations is now working, this observation is significant. To be sure, the larger coke will still need to be cut for the market, and this in itself will lead to breeze production; but there is a positive advantage in making only half the amount of breeze during the normal carbonization and quenching operations prior to cutting, and in making breeze of a greatly improved quality.

The National Coal Board must come into the picture. Now that the Board controls the coal for the whole nation, the policy of coal users will be dictatable by the Board to a greater extent than formerly. Presumably the Government will require that the Board shall implement the report of the Fuel and Power Advisory Council, but the Board has the decision to make whether to produce the smokeless fuel by the development of the anthracite mines or by the manufacture of coke. The coal cleaning policy of the mines will be settled by the Board and it is a decision that the Board must take as to how far clean coal can be produced, and at what price. It is certain that in cleaning coal the medium-ash intermediates cannot be discarded. Admittedly, the intermediates may not be very high in some coals, but there are others! The high-ash intermediates, containing perhaps 12—16% of ash can be used in boilers, if the boiler plant is designed to use them. Such coal must command a lower price than the best washed coal, of course. The decision to produce such coal may have difficult repercussions. One can imagine that the electricity industry, if asked to take the high-ash rejects that the Gas Industry did not want, might object. Clearly, the economics of low-ash coal will require careful consideration not only from the Gas Industry angle, but also from that of the National Coal Board.

Apart from any questions of policy and economics, the use of coal low in ash content is desirable on technical grounds. One bad parcel of coke may well neutralize a hundred good batches. Ill news spreads apace, and if bad coke is being sold—as it is to-day—containing considerable quantities of ash, the cause of smoke abatement will be set back until anthracite is freely available as the solid smokeless fuel. In its own interest the Gas Industry should move quickly.

The ash content of normal coke depends on its size, increasing as the size diminishes; with low-ash coal, the ash content remains much the same throughout all sizes, including the breeze. That will help to solve the breeze problem by making the breeze more popular as a boiler fuel. The coke from low-ash coal has a better appearance and behaves better in use. One curious observation that requires confirmation is that reduction in the ash content increases the rate of carbonization. This seems to require a good deal of explanation. We can readily accept an increased rate of gas production, but not a greater speed of carbonization. The explanation has been given that it is not due to reduction in ash content, but to reduction in the amount of dust carried on the coal.

This explanation seems unconvincing, however, and since this factor must affect the economics of the use of such coal, further experimental evidence is necessary on this point.

LIFTING TACKLE

THERE must be few Britons who, through both maritime and general industrial tradition, are not interested in ropes and chains, and for whom B.S. Handbook No. 4, British Standards for Lifting Tackle, will not have more than a passing interest. The book is really a bound collection of British Standard Specifications issued during the last few years covering all kinds of ropes, both fibre and wire, and chains and slings, with splices, joints, and terminal attachments. Scattered about among its 350 pages are many curious and interesting facts, as well as much useful information about the storage, inspection, and maintenance of ropes, chains, and lifting tackle, all of the greatest value to engineers engaged in the erection and maintenance of such plant as goes to the make-up of the modern gas-works. Careful study of lifting tackle is imposed upon responsible engineers by the fact, pointed out by Sir William Stanier in the Introduction, that failure in service is liable to result in casualty —*i.e.*, accidents to persons or damage to material and plant. And there is another characteristic of this class of plant about which it is important to be quite clear. Defect in the original apparatus when made by a reputable maker is rare. Safety in the use of new apparatus is comparatively easily ensured by intelligent selection. But lack of good maintenance and failure to effect timely replacements have only too often led to casualty.

The fibre rope dates from ancient times. "Rope walks must have been in use by all maritime nations before the dawn of recorded history." Hemp for the soft rope fibre and manila for the hard are the best known materials, though not the only ones. Ropes are sized by circumference and specifications with breaking strengths are given up to 18 inches. A factor of safety of not less than 6 is recommended with 7 or 8 where conditions are adverse. The recommendations for the care of fibre rope should be studied and acted upon by all users. The necessity of frequent inspection is emphasized. And the motto "Never risk danger to life . . . . by chancing it" should be prominently displayed in the tackle stores. When there is a doubt, the rope should be condemned without hesitation. Detailed instructions for care in storage are given. Ropes should be hung loosely on wooden pegs in a well-ventilated store and never, when wet, thrown on the floor or left there. "Cases have been found where ropes attached to safety belts in gas-works have become contaminated by the fumes given off in the process—sulphur dioxide gas is most detrimental to the rope, particularly if the rope becomes wet after exposure to the fumes."

Wire ropes are applied to more strenuous duties and the editorial notes to this section of the book are appropriately fuller and more detailed. The manufacture of wire rope is, we are told, an art. It certainly requires some exercise of the imagination to picture the kind of stresses to which the individual wires are subjected in this wonderful structure—the single wires following a helical path in the strand and the strands arranged helically in the rope. The strength of the rope is inevitably less than the aggregate strength of the wires, and so complex is the structure that no one appears to have the temerity to put forward a formula connecting the two. Wire ropes fail by reason of abrasive wear of the outer wires and by fatigue, among other reasons. Regulations have been laid down, based upon experience, prescribing the limiting number of visible broken wires which shall be permitted before a given rope doing given duties shall be condemned. In design the ratio of the diameter of sheaves and drums to that of the rope is perhaps the most important point—all this having been studied in the Wire Rope Research Reports of the Institution of Mechanical Engineers. Reverse bending in the run of the rope is particularly detrimental to its life, in the least adverse conditions it may halve the life of the rope. This section of the book is fully illustrated and documented with tables, specifications, and instructions for splicing and wrapping. The importance of frequent critical inspection is obvious and maintenance in service includes lubrication and dressing. Storage should be at least as careful as with fibre ropes with the added precaution that there must be no "kinking" of the rope in handling. "A coil of rope should be paid out from a turntable" or the coil may be rolled along the ground. "In no case should the rope be unwound by throwing off the turns with the coil or reel flat on the ground."

The chain is not as old as the rope, but the welded wrought iron chain must have been made very early in the Iron Age. Chain is five or six times heavier than wire rope for the same working load. It will stand rough handling, can be stored without deterioration, and has a longer effective life, all subject to reasonable care in maintenance. The editorial notes are brief, but to the point and backed by a short bibliography. Two notable points are that the criterion of reliable open link lifting chain is a definite minimum elongation at a determined test load and that the belief that studded chain is stronger than open link chain of equal size is fallacious. Specifications of hooks and rings are of more use to the manufacturer than the user, but the tables showing the safe strength of slings with chains at different angles to the line of load are of vital importance to the latter.

The last section is a collection of the statutory requirements contained in the Factories Act of 1937 for the use of chains, ropes, and lifting tackle in Great Britain.

"GAS SERVICE" POCKET BOOK, 1947.

Orders for copies of the 1947 edition of the "GAS SERVICE" POCKET BOOK have already exhausted the limited numbers imposed on us by shortage of paper. It is therefore with great reluctance that we have to intimate that further orders cannot be accepted.

Personal

Our editorial reference last week to the formation of Powell Duffryn Technical Services, Ltd., revealed the reason for the departure of Mr. W. L. BOON from the General Managership of the London and Counties Coke Association, which was announced in the "JOURNAL" of Mar. 5. Mr. Boon has become a Director of the new Company

Mr. W. L. Boon, now a Director of Powell Duffryn Technical Services, Ltd.

Mr. J. H. Cooke, his successor as General Manager of the London and Counties Coke Association.

and has undertaken important responsibilities in the creation of a large scale organization equipped to act as independent and impartial consultants with the necessary knowledge and technical experience to operate throughout the world over the whole range of problems of fuel production, distribution, and utilization.

Mr. C. J. ALSOP, son of Mr. C. F. Alsop, Secretary of the Northampton Gas Light Company, has been appointed Technical Assistant to the Bristol Gas Company.

* * *

Mr. E. H. HART, Engineer and Manager of the Bridgnorth Gas Department since July, 1943, has resigned, to take effect not later than the end of May.

* * *

Mr. C. L. BAINES, who has been Manager and Secretary of the Cheadle and Churviet Valley Gas Company for the last seven years, is retiring from this position owing to ill-health, and is taking up another appointment.

* * *

Mr. K. J. IRVINE, Assistant Lecturer in Metallurgy at the University of Leeds, had been awarded a Nuffield Foundation Travelling Fellowship to enable him to visit the United States and Canada to study latest developments in metallurgical industries. Two students of the Metallurgical Department, Mr. J. G. PARR and Mr. R. E. COCKADAY, have been awarded Nuffield Foundation Scholarships to enable them to spend three months at metallurgical works in Canada. The Council of the University feel that the fact that out of a total of 15 such awards made recently by the Nuffield Foundation three have been made to members of the Leeds University is a tribute to the high standing of the Reader in Metallurgy (Mr. A. Preece) and of the work of the Department.

Obituary

The death occurred on Mar. 15, after a short illness, of Mr. H. F. WRIGHT, who was with Ashmore, Benson, Pease & Co., Ltd., from 1876 to 1906, and was General Manager of C. & W. Walker, Ltd., Donnington, from 1906 to 1912. During the 1914-18 war he was Chief Engineer for the Ministry of Munitions at Gretna Cordite Factory. He came to London in 1919 and settled at New Barnet. He was Chief Engineer of Anglo Mex in 1919 and of Shell Mex in 1921, and retired in 1930.

Letter to the Editor

Keeping the Kitchen Fire Alight on Smokeless Fuel

DEAR SIR,—I was very interested in the letter by Mr. H. J. Toogood which you published in your issue of Mar. 5. May I say that I have been able to keep a kitchen range alight at night on coke for several months. The range in question in a small one of the Triplex type having an oven at one side and a boiler at the back of the fire.

Each night the fire is cleaned, and the ashes are raked out from the flue under the boiler before the grate is refilled with coke. The boiler damper is opened fully for a few minutes to brighten the fire; then it is completely closed. A layer of small coal and dust, about ½ in. thick, is sprinkled over the surface of the coke and then pressed down with a shovel. A firebrick, which is an easy fit in the grate, is placed on top of the coal to conserve the heat, and the air louvres in front of the grate are half closed. The smoke louvres over the fire are left half open to carry away any smoke and fumes.

Under these conditions the fire will burn slowly for about 10 hours. In the morning the air louvres under the grate, and the boiler damper are opened fully, and the (hot) firebrick is removed with a shovel. A hot fire is available almost immediately, and the surplus ash can be raked out before adding more coke.

It has been found that apart from keeping the kitchen warm during the night a considerable amount of heat is added to the hot water system at the expense of very little coke.

Yours faithfully,
RONALD L. TARRATT.

West's Gas Improvement Co., Ltd.,
Manchester.
Mar. 18, 1947.

Sales and Service Management

DEAR SIR,—If anyone wishes to educate himself in salesmanship I suggest that every inspired member should become sooner or later a member of the Incorporated Sales Managers' Association. At the end of June, 1946, the membership total of the Association was 2,811, but only 18 members came from gas undertakings. Naturally one has to have certain qualifications; and for the guidance of my colleagues who are anxious to become members of the Association, I would like to bring before them the Association's definition of sales management. This is defined as covering the whole of that part of business administration known as distribution—that is, all the various activities involved between the production of goods in final form and their delivery and acceptance by the consumer. These activities are concerned with the preparation, planning, and execution of sales programmes and include certain broad functions commonly known as marketing, market research, selling, advertising, and warehousing and delivery.

For the young man entering the Gas Industry in the sales and service department it would be beneficial, after having taken the examinations of the Institution of Gas Engineers (Supply), to follow up with the examinations of the Incorporated Sales Managers' Association, and every candidate who wishes to enter for the Association's examinations must apply on a prescribed form for registration by the Association as a registered student.

The Association provides many advantages including the official journal, *Marketing*, a well appointed library, a student movement, and so on, while its aims and objects are essential to the sales manager.

Yours faithfully,
"M.S.M.A."

Mar. 17, 1947.

Fracture of Pipes due to Frost

DEAR SIR,—I note in your editorial in the "GAS JOURNAL" of Mar. 12, commenting on Mr. Shann's Paper to the London and Southern District Junior Gas Association, that you say that the effect of ground frost in increasing pipe fractures is not apparently very well understood, and it is suggested that freezing of the surface causes subsoil movements which induce bending stresses in the pipe.

I would like to suggest that a contributory factor may be the increased notch-sensitivity of iron and steel which occurs with even a small reduction of temperature. Thus, if the pipe concerned was under a certain initial stress, a drop of even 10° F. in the subsoil temperature could cause a brittle fracture if such a drop in temperature occurred sufficiently quickly.

Yours faithfully,
F. L. ROBSON.

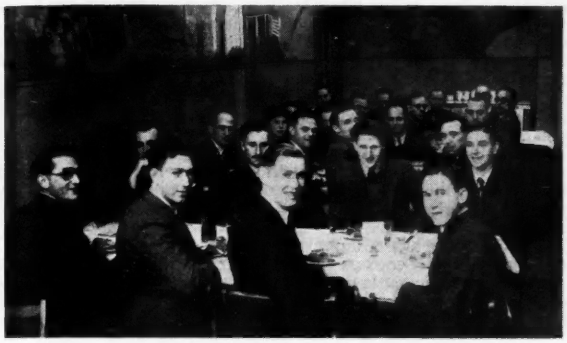
195, Scotland Street,
Glasgow, C.5.
Mar. 20, 1947.

Diary

Mar. 27.—Industrial Gas Development Committee, 10.30 a.m., Gas Industry House.
Mar. 27.—Midland Counties Coke Association: Annual General Meeting, King Edward House, Birmingham. 2.30 p.m.
Mar. 28.—North of England Gas Managers' Association (Auxiliary Section): "Review of the Post-war Period at Middlesbrough," S. Jones. Council Chamber, Municipal Buildings, Middlesbrough, 2.45 p.m. (Postponed from Mar. 14.)
Apr. 2.—Institute of Fuel (North Western Section): Annual General Meeting, Engineers' Club, Manchester, 2.30 p.m.; preceded by Luncheon, 1 p.m.
Apr. 10.—Institution of Chemical Engineers: 25th Annual Corporate Meeting, Connaught Rooms, 11 a.m. Luncheon, 1 p.m.
Apr. 14.—London and Counties Coke Association: Technical Committee. 2.30 p.m. Gas Industry House.
Apr. 15.—National Federation of Gas Coke Associations: General Committee, 10 a.m.; National Technical Committee, 11.30 a.m. Gas Industry House.
Apr. 15.—Solid Smokeless Fuels Federation: Technical Committee, Gas Industry House, 2.45 p.m.
Apr. 15.—British Gas Council: Central Board. Gas Industry House, 2.30 p.m.
Apr. 15.—Midland Junior Gas Association: "Distribution, Mainlaying, Servicing and Design of Distribution Systems," A. G. Addison (Birmingham).
Apr. 17.—Yorkshire Junior Gas Association: Visit to Derbyshire Silica and Fireclay Co., Ltd., Friden.
Apr. 19.—London and Southern District Junior Gas Association: Visit to High Wycombe Works of the Uxbridge, Maidenhead, Wycombe, and District Gas Company.
Apr. 19.—Manchester and District Junior Gas Association: Visit to Stockport Gas-works. Paper: "The Production of 53% Sulphur Spent Oxide," J. Gaskarth (Liverpool).
Apr. 25.—London and Southern District Junior Gas Association: "The Woman's Point of View," Miss Maywen Godby. Gas Industry House, 7 p.m.
Apr. 29.—Midland Junior Gas Association: Annual General Meeting, followed by Address, "New Methods and Materials for House Construction," A. G. Day (Building Research Station).
Apr. 29.—Southern Association of Gas Engineers and Managers (Eastern District): "Mechanized Accountancy and Statistical Work as Applied to a Gas Company," J. D. Thomas (North Middlesex Gas Company). Gas Industry House, 2.30 p.m.
May 9.—Manchester District Association of Gas Engineers: Annual Meeting and Luncheon, Midland Hotel, Manchester,

Students at Meter Works

Ex-servicemen who, as students, are taking the Gas Engineering Course at Birmingham University, were recently entertained by George Wilson Gas Meters, Ltd., at Coventry, where they warmly appreciated the facilities offered them for observing the assembly and production of meters. Although it was a Saturday, arrangements were made for certain machines to be working, and the party was split into small groups to facilitate the easy discussion of technical points. Keen interest was shown in the various stages of production, the prepayment mechanism, and the meter repair section.



The guests at luncheon

Following the inspection and demonstration, luncheon was served in the canteen, where the guests were joined by Mr. J. E. Wakeford, Engineer and Manager of the Coventry Gas Department. After the meal, Mr. W. D. Wilson, Chairman, referred to the important part played by meters in the Gas Industry and the necessity for accuracy and skill in their production.

Mr. Wakeford also spoke and referred to the opportunity which he foresaw for newcomers in the Industry in the future. He felt the time was coming when the specialist would become an individual of the highest status, and he recommended the guests to work hard and to grasp their opportunities.

"The Mechanism of Contact Catalysis"*

Reviewed by Dr. R. F. Strickland-Constable, Gas Research Board

The literature published on the general subject of catalysis must be prodigious, and in writing a book about it the chief difficulty must lie in deciding what to leave out. Actually Mr. Griffith has limited himself to the *mechanism* of catalysis and quotes examples of catalytic reactions only insofar as they are needed to illustrate the principles which he discusses. Even so the task remains a difficult one in view of the scarcity of general principles and the lack of general agreement on the validity of such as there are. For instance, it appears that there is not even general agreement on the definition of such terms as activated adsorption and chemi-sorption. Nor does it appear that such a commonly held theory as that of active centres is universally accepted. This is, however, the fault of this subject, and Dr. Griffith has done a good piece of work in assembling and ordering present knowledge of this branch of physical chemistry. One of the most satisfying sections of the book will be found in the theory of promoter action (p. 89), where some of Dr. Griffith's own work is quoted in support of one of the most interesting conclusions in the whole field.

The present (second) edition brings the first edition up to date without altering the general layout or treatment. The Gas Industry will be interested to see what a very wide range of catalytic reactions have come within the orbit of the Author's personal experience. The reviewer finally suggests that some sections of the book appear unduly compressed or abbreviated, and that in a third edition the arguments of these sections might be expanded.

* "The Mechanism of Contact Catalysis," by Dr. R. H. Griffith, Senior Research Chemist, Gas Light and Coke Company. Second Edition. Oxford University Press; price 21s. net.

New in Brief

Middlesbrough Corporation is to take £15,000 from the profits of the gas undertaking for the relief of the general rates.

Stockton-on-Tees Town Council has accepted the tender of Whessoe, Ltd., Darlington, for the erection of a gasholder at Haverton Hill-on-Tees to improve the gas supply in that area.

Blackpool Gas Committee has appointed a sub-committee to devise a new scheme at the gas-works for coke distribution to householders. The idea is to prevent families securing more than their fair share to the detriment of others.

The Manchester District Association of Gas Engineers will hold its annual meeting and luncheon at the Midland Hotel, Manchester, on May 9. Preliminary notice is also given of President's Day on June 20, when the members will be the guests of the President at Blackpool.

Between £40,000 and £50,000 will be spent by Leicester Gas Committee on the construction at the gas-works of a plant for the manufacture of gas from crude oil. The quantity of gas already produced by this process will be doubled, but it is not anticipated that the new plant will be in full production for about two years.

Middlesbrough Corporation's gas estimates for 1947-48 include £40,000 for purifiying plant, £20,000 for carbonizing plant, £52,000 for trunk mains and governors, £25,000 for new mains, £5,000 for cookers, and £5,000 for mains. In 1949-50 it is intended to spend £18,000 on new offices and £10,000 on showrooms.

Electricity Shortages being very probable in the next few years the Halesowen Town Council has altered its decision to make 60 houses on the Banner Lane site all electric. Six houses have been erected, but approval of the Ministry of Health is being sought for gas points to be fixed in the others.

The Net Proceeds of the production recently of "Bridge Head" by Dublin Gas Company Players were approximately £20, which is being given to the National Council of the Blind of Ireland Wireless Fund. During the last five years the dramatic society has contributed £105 to various charitable organizations in Dublin.

Application is To Be Made by the Stamford and St. Martin's Gas Company to the Ministry of Fuel and Power for an order to increase the share capital of the Company by £12,000 and to increase the borrowing powers 50% to 100% on the paid up capital, in order to carry out extensions approved by the Ministry. No capital has been issued since 1920 and the existing capital figure is extremely low.

Tenders and Provisional Estimates in connexion with the erection of additional carbonizing plant at Chesterfield gas-works, amounting to an estimated total of £130,308, have been approved by Chesterfield Gas Committee. To meet the increasing demand for gas supplies in the town and district it has become necessary to replace existing plant and to make certain additions.

Boldon (Durham) Urban District Council has been informed that the Newcastle-on-Tyne and Gateshead Gas Company was not willing to carry gas mains to 150 houses at Boldon Colliery unless the tenants had freedom of choice as to the fuel for cooking and laundry. If the Council agreed to this course, the Company would lay the gas mains at their own expense. The Council has agreed to leave the choice to the tenants.

The Annual Corporate Meeting of the Institution of Chemical Engineers will be held at the Connaught Rooms on April 10. Following the routine business and presentation of the Osborne Reynolds, Moulton, Junior Moulton, and William Macnab Medals, starting at 11 a.m., Mr. Hugh Griffiths will deliver his Presidential Address at noon. Many distinguished guests have been invited to the annual luncheon at 1 p.m.

The Scottish Fuel Efficiency Committee has agreed that the Chairman, Sir Patrick Dollan, should write to the Prime Minister and the Minister of Fuel and Power, suggesting that the coal target for next winter should be a minimum of six weeks' reserve for industrial, commercial, and domestic users, in accordance with the pre-war practice in Scotland. A sub-committee has been appointed to consider district heating schemes, of which 15 have been proposed by local authorities.

A Substantial Reduction in gas received from coke oven plant has compelled the Accrington District Gas and Water Board to make drastic cuts to consumers. Mr. A. Harrison, General Manager, reports that unless consumption eases further cuts would be necessary. "The reduction in quantity received from the coke oven plant coupled with overloading has compelled us to cut pressures more drastically than hitherto," he said. "We were just about holding our own. This reduction has upset things completely." The reduced supply from coke ovens is attributed to the weather and unsuitable coal.

British Gas Staff Association

The British Gas Staff Association now has a membership approaching 11,000. A branch has recently been formed among the staff of the South Metropolitan Gas Company, and it is hoped that many of the staff of nearly 2,000 will join the Association.

Regional Councils have been formed in the 12 regions of Great Britain as defined by the Ministry of Fuel and Power. A Regional Joint Staff Council is functioning in London, and negotiations are taking place at the highest level regarding the formation of a National Joint Staff Council for gas staffs.

The rapid growth of the Association and the prospective nationalization of the Gas Industry have increased the volume of work and the Council of the Association recently decided that the time was opportune for the appointment of additional paid officials and staff.

Although the growth of the B.G.S.A. has been so considerable many gas staffs throughout the country are still unorganized. This fact, together with the fact that the 100 branches in Great Britain needed a co-ordinating hand, decided the Council to appoint a National Organizer.

Mr. H. J. Arnold, General Secretary, has been carrying the burden of organizing work in addition to his general duties, and during the course of his travels throughout the country has acquired invaluable experience in organizing gas staffs. As a consequence the Council approached Mr. Arnold, and he has been appointed National Organizer.

Mr. F. C. Henfrey-Smith, until recently employed in the South Suburban Gas Company, and the Secretary of the London Regional Council and a member of the Council of the B.G.S.A., has accepted the post of General Secretary. Both appointments date from Mar. 1, and general correspondence should be addressed to Mr. Henfrey-Smith, at 12, Hall Drive, London, S.E.26 while enquiries regarding membership should be addressed to Mr. Arnold, at 36, Parkthorne Drive, North Harrow, Middlesex.

Reports on German Industry

More reports on German industry have been published, bringing the total now available to 1,774. These reports, which can be purchased from H.M. Stationery Office, are prepared by Allied industrialists, mainly British and American, who were sent to Germany under the auspices of the Combined Intelligence Objectives Sub-Committee, the British Intelligence Objectives Sub-Committee, and its American counterpart, the Field Information Agency, Technical. B.I.O.S. Information Section, 37, Bryanston Square, London, W.1, may be consulted with regard to all problems relating to scientific and technical intelligence from German industry. The latest reports include:

B.I.O.S. 380. The Bentheim Gas Field. (History and present status as a source of natural gas.) (2s.)

B.I.O.S. 1038. Ruhrchemia A.G., Sterkrade-Holten, near Oberhausen, Ruhr. Methanization of coal gas and production of acetylene from methane. (1s. 6d.)

B.I.O.S. 1094. The Ruhrchemie-Ruhrgas Process for Catalytic Enrichment of Coal Gas by Methane Synthesis. (2s.)

B.I.O.S. 1117. The Benzin-Benzol Verband, Bochum and the German Benzole Industry. (3s.)

B.I.O.S. 1142. The Wintershall-Schmafeldt Process for the Manufacture of Synthesis Gas at Lutzkendorf. (3s. 6d.)

The exhibition concerning the investigation of German industry which was held at the Board of Trade in December is now on tour of the principal regional centres, and will visit Sheffield, Manchester, and Belfast. The exhibition is designed to illustrate the methods by which German scientific and technical intelligence has been gathered, how it is dealt with, and how B.I.O.S. Information Section can assist firms to locate and select reports and documents of interest to their branch of industry.

Bedford Homecraft Course

Tribute to the Bedford District Gas Company, and Miss Margery Davis, Home Service Adviser, was paid by the speakers from the Education Department at the opening of the Women's Gas Council Homecraft course at Bedford.

The occasion was supported by Mr. R. Turner, General Manager of the Bedford District Gas Company, the Mayoress of Bedford, Mr. L. J. Harper, in charge of further education, Miss Dobbyn, Domestic Science Organizer, and Mr. F. C. F. Chalker, Principal of the Technical Institute at Bedford. Mr. Harper said the education authorities welcomed the co-operation of the Gas Company in their campaign for education in Homecraft, and Mr. Chalker praised the work done by Miss Davis and the Gas Company in the past and said he was confident the present course would prove equally useful.

Mrs. Peggie Ferrow, of the Women's Gas Council, also gave a lecture on "Kitchen Planning" to begin the course. A total of 106 members enrolled for the course, including a large proportion of single girls and young married women.

Newcastle Gas Grid

A story of "Tyneside's Own Gas Grid," particularly topical in these days of fuel crisis, was told in a special article in the Newcastle *Weekly Chronicle* on Mar. 8. During the past decade, the writer points out, Tyneside has gradually acquired a gas grid of its own. The Newcastle and Gateshead Gas Company has seven gas-works as far afield as Morpeth and Chester-le-Street and right down the coast to Tynemouth and is the fourth largest in the country. In addition, it draws supplies from three coke oven plants—Consett Iron Co., Priestman's Teams Cokeworks, and the Bowes and Partners ovens at Monkton, Jarrow.

On virtually the same plant and equipment, the Company is producing 50 million cu.ft. a day on its peak days, as compared with 30 million cu.ft. before the war. In 1930, only 18% of the output was for industrial users; in 1939 the figure was 40%; and at the peak of the war period, 52%. With the end of the war and the dropping of the "armament" load, the Company anticipated a fall of 1,500 million cu.ft. a year.

Already a very considerable volume of this load has been taken up and the introduction of new industries to the Tyneside area is already making further demands on gas.

One of the biggest loads of the war was the gas for the bomb factory at Jarrow. Now a single glassworks, with modern furnace methods has taken up the whole of that load. The Leamington works, Davisons at Teams and Sowerby's at Gateshead, are using 1,500 million cu.ft. per year.

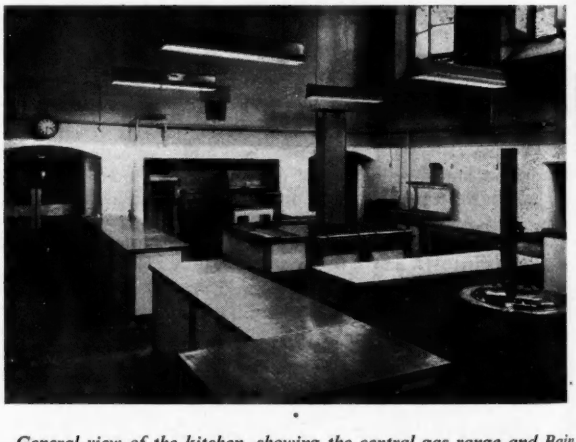
The Company has 1,700 miles of mains; 266,600 consumers of all types; 185,000 gas cookers on hire; and 50,000 gas fires on loan.

In the recent blizzards the Company had to move by hand 300 tons of snow from the top of the biggest holder or the pressures would have been upset.

King's College Gas Kitchen

The equipment and general efficiency of the large scale catering arrangements which the service of meals in the Cambridge colleges demands have reached a very high level. A notable example is found at King's College, where the kitchen has recently been reconstructed and modernized, a fact which is recorded for posterity by a wall plaque which announces that "These kitchens were reconstructed in 1946 and that the first dinner cooked by J. Tabor, Oct. 9, 1946." This accompanies a companion plaque stating "The first dinner dressed by J. Laurence, Feb. 27, 1828."

The new appliances have been supplied and installed by the Cambridge University and Town Gas Light Company, and it is by the kind permission of the Second Bursar, Mr. G. W. N. Rylands, that details can be given, together with a photograph of the kitchen.



General view of the kitchen, showing the central gas range and Bain Marie, fish fryer, double and treble burner griller, stockpot stand, Chester single oven cooker, vegetable boiler, and hot and cold service counters.

A Regulo-controlled four-oven gas range comprising three solid hot plate sections, and one open type section (one section being fitted with a brazier burner) together with Bain Marie, occupies a central position in the main kitchen, supplemented by a gas-heated fish fryer, a double and treble burner griller, and a Chester single oven cooker and stockpot stand. A large pressure steam oven is also installed, with two gas heated vegetable boilers, a Keswick steamer and hot and cold service counters (the hot sections being gas and steam-heated), supplemented by a 9 ft. hot closet, also gas and steam-heated. A roasting and baking oven, a double oven Chester range, a 50 quart pedestal mixing machine with mincer and mayonnaise dripper attachments and a Keswick steamer supply the requirements of the pastry room.

London Juniors' Convention

The 1947 Convention of the London and Southern District Junior Gas Association last week end was conspicuously successful, both technically and on the social side. A year ago, when we described the first Convention as an Institution meeting in miniature, the members divided after the opening speeches into separate sections for the study of the various aspects of Gas Industry activities; successful though that Convention was, some members were disappointed at not being able to hear about "the other fellow's" problems. On Saturday one three-hour sitting, with one brief break, was time-tabled to cover the opening ceremony and three sessions, so that everyone was able to hear all that was said on Administration, Production, and Utilization.

The President (Mr. G. G. Warne) presided, and Mr. Frank Dawson, President of the Southern Association of Gas Engineers and Managers, struck the right note in opening the Convention. There were many distinguished guests, but Mr. Warne confided his words of welcome to the many representatives from the sister Junior Associations throughout the country.

The "Administration" session was ably filled by Mr. W. K. Tate, General Manager of the Portsmouth and Gosport Gas Company, with an Address on "Management and Administration." There was no discussion beyond the comments of the mover and seconder of a vote of thanks. Incidentally, in his response Mr. Tate, paying tribute to the President, disclosed that Mr. Warne had just been promoted to the post of Distribution Engineer of his Company.

The "Production" session was devoted to a Paper by Mr. C. Stott, Engineer of the East Greenwich Works of the South Metropolitan Gas Company, on "The Technical Basis of Works Practice," dealing with the functions of the technologist in industry, his interest, outlook, and general training and specialized training within the Industry, the technical standards of efficiency in gas manufacture, and the role of labour, and works costs as a final criterion.

For the "Utilization" session Mr. G. C. Holliday gave a Paper on "Further Observations on the Provision of Heat Services in New Houses." Mr. Holliday was co-Author with Mr. L. W. Andrew and Mr. E. W. B. Dunning of the Institution Gold Medal Paper on "Technical Aspects of the Gas Industry's Contribution to Post-war Housing" in 1945, and his present Paper was a highly instructive sequel to that communication.

Time permitted only brief discussion of both these Papers, but would-be speakers were invited to submit written contributions.

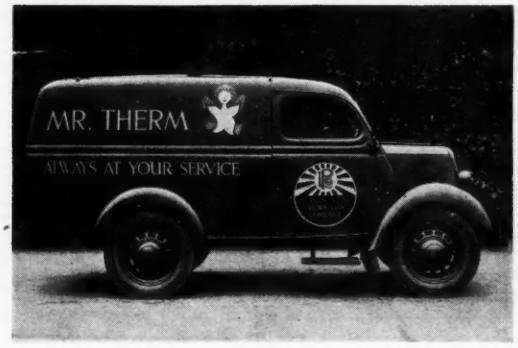
Luncheon followed at the Ardington Rooms, Clapham, this event being noteworthy from the fact that there were no speeches. The afternoon was spent in visiting the works of the Wandsworth and District Gas Company, tea being served in the main offices at the close of the tour.

Saturday's heavy programme was preceded on Friday evening by well-attended reception and dance at Caxton Hall, Westminster. Members and guests were received by the President and Mrs. Warne, and the zest in dancing to Eric Winstone's New London Dance Orchestra was enhanced by the award of a number of prizes given by Mr. Arthur Tennant. Mr. W. K. Tate, the guest of honour, made a brief speech of congratulation and good wishes during the evening, and among other principal guests were Mr. S. E. Whitehead, Mr. F. Dawson, Mr. J. R. W. Alexander, Mr. A. Tennant, and Mr. G. C. Holliday. The ladies were also invited to the luncheon and the works visit on Saturday, and a surprisingly large number of them participated in the tour of the works with obvious interest.

We shall deal more fully with the Convention in "GAS," our monthly paper covering the activities of the British Junior Gas Associations.

An Attractive Van Design

The design chosen for the Leamington Priors Gas Company's new Ford 10 cwt. van is in keeping with the attractive atmosphere of that spa. The body of the van is painted in the maroon colour used for all the Company's vehicles, and the lettering and figure of Mr. Therm are in orange. The lettering was carefully chosen for the purpose, and is based on the lettering from the Trajan Column which was reproduced some years ago in the B.C.G.A. Gas Bulletin.



Gas Service

The manufacturing side of the Gas Industry is almost unique in engineering circles for the amount of enthusiastic research and investigation work carried out and published by its workers. The pages of the "JOURNAL" and "GAS" bear witness to the constant presentation of valuable and provocative Papers. No less active are their colleagues upon the service side, who are untiring in their efforts to provide the public with an ever-improving standard of courtesy and efficiency. We give below a summarized glance at some of the features contained in the March issue of "GAS SERVICE" for the benefit of those whose work lies in fields less intimate with the ultimate consumer.

The Editorial View

The methods by which service to the consumer can be improved are ever under review; theories and suggestions are constantly being added to our general store of knowledge. A new method by a new advocate is discussed this month and the familiar subjects of maintenance, the relative merits of the maintenance fitter and the installation fitter, and the importance of the foreman are examined in a new light. The necessity of erasing the harmful superstitions concerning the use of gas as a fuel which still persist among the unenlightened is another matter receiving attention, while a critical analysis of the I.G.E. publication, "Careers in the Gas Industry," with particular reference to the opportunities offered for women, together with a note upon the Ideal Home Exhibition, are also considered.

The Art of Display

A new series of articles entitled "The Showroom Window" commenced in last month's issue. The subject is further developed in the current number and a topical note is struck by a number of suggestions for a special Easter display. To enable the public to accept gas as a necessity in everyday life, it is essential that gas undertakings enter into the communal life of their district. Many ingenious ways in which this may be achieved, often by collaboration with a local industry, are described and the article, written as it is with the aim of supplying practical help to the gas undertaking, is pointedly and amusingly illustrated by means of original sketches.

Feminine Intuition

Reference is made in the editorial notes to the position and value of the woman in our midst. The task performed by the home service adviser is an important one—a fact which is readily appreciated upon reading the account of home service in Oxford by Miss Marguerite Narracot. The article is of interest to all concerned with the service side of the Industry and the relations existing between the public and the undertaking.

The popular feature "A Woman's Viewpoint" is continued this month and considers, among other matters," the rival merits of gas and electricity in canteens.

Across the Atlantic

Another feature which occupies a unique place in informative reading in this country is "American Commentary." For many years these reports have appeared regularly in "GAS SERVICE" and "THE GAS SALESMAN," keeping a skilful finger upon the pulse of the Gas Industry in the United States. This month's commentary describes, in typical breezy fashion, the imminent decline in the prices of appliances and the undesirability of "stuffy" restrictions.

Improving the Breed

The first part of the Paper with the above title by A. Forshaw, Chief Chemist of R. A. Main, Ltd., which was presented to the Scottish Gas Salesmen's Circle (Western District), was given in the February issue. This month the Paper, which traces the evolution of the gas stove from its inception to the present day, is concluded. There is a wealth of detail and Mr. Forshaw has spared no pains to produce an exhaustive account of the gradually changing and improving designs which combines long experience, expert knowledge and a pithy and sometimes critical pen. The article deals in particular with smothering, cleaning, condensation, and the standardizing of cooker tests.

Space Heating

This familiar subject has formed the basis of many articles and is as yet not fully explored. The latest intrepid traveller is H. E. Robinson, who in his Paper, "Space Heaters and Controls," which is commenced in this issue, deals firstly with gas-fired equipment which may be used for either system of convection heating, direct or indirect, followed by a description of the development of the first type and concluding with an examination of the controls for equipment of either type. Natural draught convection, the conversion equipment for central heating boilers, and methods of operation are among the headings covered in the first instalment. The Paper was presented to the Northern Area Circle.

A Popular Size

The March "GAS SERVICE" is attractively produced in its customary pocket size, and contains in addition to the features outlined above items of news and general interest, illustrated by photographs.

Midland Association of Gas Engineers and Managers

THE Annual General Meeting of the Midland Association of Gas Engineers and Managers was held at the Queen's Hotel, Birmingham, on Mar. 20. Mr. G. P. Mitchell (Worcester), the retiring President, occupied the chair prior to the installation of Mr. P. Dougall (Kidderminster) as his successor.

The **Secretary** (Mr. J. H. Wainwright) announced with regret the death of Mr. W. H. Thomas, for many years Engineer of the Alcester Gas Light, Coal, and Coke Company, who had been a member of the Association since 1904.

The **President** extended a warm welcome to a number of distinguished guests, among whom he mentioned Mr. E. J. Grosvenor, Chairman of the Kidderminster Gas Company, Dr. W. T. K. Braunholtz, Secretary of the Institution of Gas Engineers, and Sir Ernest Smith.

The annual report and accounts were adopted and the following elections were confirmed: *Vice-President*, S. J. D. Williams (Stourbridge); *Hon. Secretary and Treasurer*, J. H. Wainwright (Halesowen), with thanks for past services; *Committee*, J. Corrigan, S. J. Sadler, and P. T. Harris; *Auditors*, J. S. Bird and W. E. Plevin; *Council of the Institution of Gas Engineers*, G. P. Mitchell; *Midland District Education Committee*, G. C. Pearson, C. F. W. Rendle, H. R. Hems, and S. K. Hawthorn.

On the recommendation of the Committee, Sir Ernest Smith, G. Helps and F. Shewring were elected to Hon. Membership of the Association. The **President** said they were greatly indebted to the three gentlemen named for their services to the Association in the past.

Mr. **G. Helps** (Nuneaton) said that while he appreciated the honour he still considered himself a working member, and did not wish to regard himself as having gone on to the honorary list. He had not given up work; his job was still to produce more gas per ton of coal.

Sir **Ernest Smith** associated himself with Mr. Helps's remarks.

New members of the Association were elected as follows: A. Facer (Hereford), and E. N. Farnworth (Newcastle-under-Lyme).

The Benevolent Fund

The **President** proposed that the Association's donation to the Institution of Gas Engineers Benevolent Fund should be increased for this year from 50 guineas to 100 guineas, to mark the occasion of Mr. G. C. Pearson's Presidency of the Institution. He suggested that the individual members might similarly mark the occasion by doubling their donations this year. It was a very deserving cause and he was sure such a gesture would be appreciated at headquarters.

Mr. **C. F. W. Rendle,** District Representative of the Fund, said the income was not sufficient to do all that should be done. The value of money had altered and the recipients of assistance were finding it hard to make ends meet. Only about half the members of the Institution were subscribers to the Fund. There were new young men coming in as Associate Members who had not, by reason of their youth, given much serious thought to old age, and he suggested that they might be approached through the Junior Associations in order that they might appreciate the magnificent reasons for the existence of the Fund and be constrained to contribute to it. Only about 30% of those who contributed had taken advantage of the covenant scheme under which, by pledging themselves to subscribe a reasonable sum, regularly, they could substantially increase the value of their contributions to the Fund.

Dr. **W. T. K. Braunholtz,** Hon. Secretary of the Fund, thanked the Association for its decision to double its contribution. The amounts they were able to distribute did not go very far, and such a generous gesture would help enormously.

Commercial Association Wound Up

Mr. **C. M. D. Belton** (Shrewsbury), reporting on the Midland Commercial Gas Association, said that owing to the re-organization of all the committees in connexion with the Gas Industry generally the Association had really lost its original purpose. All the items that used to constitute their standard agenda were dealt with by different committees set up for those purposes. The Committee of the Association had met that day and considered whether it was advisable, or useful, or necessary, that it should be continued, and a resolution was passed recommending that it should be wound up. It had served a useful purpose for many years, particularly under the leadership of Mr. R. S. Ramsden, Mr. F. C. Briggs, and Mr. A. G. Williams, but at present there was no time available for meetings. There was such a plethora of other meetings that it became unnecessary and irksome to add to their number. The recommendation was that the Commercial Association be wound up and that the funds be handed over to the Midland Association, to be transferred to the Benevolent Fund.

The recommendation was approved.

Mr. **H. R. Hems** reported that the Midland District Education Committee had shown a great deal of activity. A year ago he had reported that they were just beginning to feel their way into the post-war educational world; he was now able to say that they were doing their full share, particularly in regard to the intensive courses. Birmingham was the only centre providing both Ordinary and Higher Grade courses. Twenty students sat for the examinations in December, with satisfactory results, 74% passing the examinations, and there were now 40 students in Birmingham taking the intensive courses. They appreciated the co-operation of the Institution and the City of Birmingham Gas Department, and he wished to pay tribute particularly to the Principals of the Aston and Central Technical Colleges. The Ordinary work was now coming back into the picture, and members were being asked for assistance in connexion with the gas fitting examinations, and he wished to thank Mr. E. T. Pickering and Mr F. L. Atkin and all those who were responsible for the various classes.

The New President

Mr. **Mitchell,** in retiring from the Presidency, assured his successor that, given similar support, he would greatly enjoy his year of office. He then invested him with the Presidential jewel.

Mr. **Dougall** returned thanks for his election and then delivered his Presidential Address, which will be dealt with in a later issue of the "JOURNAL." Interest in the Address was enhanced by the showing of a series of films illustrating the growth of the Kidderminster undertaking, technical details of repair and reconstruction work, and events of general interest, including a coloured version of the Kidderminster carnival. Of topical interest was a series of flood pictures taken in 1940, illustrating conditions such as those which have prevailed in recent days.

A vote of thanks was accorded to the President on the proposition of Mr. **S. J. D. Williams,** seconded by Mr. **A. B. Britton.**

The **President,** acknowledging the vote of thanks, also expressed the thanks of the Association to Mr. G. P. Mitchell for his many services during his Presidential year, and particularly for the memorable day spent at Worcester.

Mr. **E. J. Grosvenor,** Chairman of the Kidderminster Gas Company, congratulated the Association on having appointed Mr. Dougall as President; it could not, he said, have made a better choice. Members of the Association would realize what it had meant to have come through the difficulties which they had all experienced with flying colours. As Chairman of Mr. Dougall's undertaking, he could not speak too highly of the way in which he had overcome the innumerable difficulties that had arisen during the past eight years, and especially during the past eight weeks. Speaking on behalf of the Board, he extended a cordial invitation to the Association to visit Kidderminster on May 7, to pull the works to pieces, metaphorically, and, if possible, to show Mr. Dougall how he could run the works even more successfully than in the past.

GAS "Intensive Courses"

We have recorded in our columns the setting up of the Intensive Courses which are being arranged by the Gas Education Committee of the Institution of Gas Engineers and which have been recognized by the Ministry of Labour and National Service for the purpose of awards under the Government's Further Education and Training Scheme to those fulfilling the conditions of the Scheme.

Arrangements have now been made to start a Course at the Westminster Technical College, London, in Gas Engineering (Manufacture) on Apr. 14. The Course is intended for students who have had little or no previous training in gas engineering, but it is assumed that applicants will already possess an elementary knowledge of mathematics and science. It is designed to enable them to reach the Ordinary Grade standard by December of this year. A period of practical training with a gas undertaking will follow and a further full-time period at a technical college, beginning in April, 1948, will take the students to the Higher Grade standard by approximately December, 1948.

The portion of the Course relating to the Ordinary Grade Certificate will have the following time-table:

Apr. 14, 1947—July 25, 1947.
Sept. 8, 1947—Dec. 19, 1947.

Arrangements will be made for those students who desire it for the whole or part of the summer vacation, July 28 to Sept. 6, 1947, to be spent with a gas undertaking for practical training.

At the conclusion of this portion of the Course students will be required to pass examinations in ancillary subjects set by the College and in the main subject of Gas Engineering (Manufacture) set by the Board of Examiners of the Institution of Gas Engineers.

The following subjects will be studied:

Gas Engineering (Manufacture), 9 hours per week.
Mathematics to S2 standard, 6 hours per week.
Engineering science to S2 standard, 6 hours per week.
Engineering drawing to S2 standard, 6 hours per week.
Chemistry to S2 standard, 6 hours per week.

The cost of this portion of the Course will be £40, excluding text-books and instruments, which will cost approximately £10. There will be no fees for examinations in ancillary subjects, but a fee of 7s. 6d. will be charged for the main subject examination. No fees will be charged for the period of practical training with gas undertakings.

Applicants should write without delay to Dr. J. N. Long,

M.I.Mech.E., Principal of the Westminster Technical College, at Vincent Square, Westminster, S.W.1, and should advise the Secretary of the Institution of Gas Engineers that they have done so.

The Gas Light and Coke Company has intimated that it will do its best to assist candidates in finding suitable accommodation, and should applicants desire to take advantage of this offer they should communicate with the Training and Education Officer, Mr. R. N. Le Fevre, Gas Light and Coke Company, Watson House, Townmead Road, Fulham, S.W.6, as soon as application to attend the Course has been accepted by the Principal of the College.

The Course is designed to enable students to obtain the Higher Grade Certificate in Gas Engineering (Manufacture), which is the academic requirement for Associate Membership of the Institution of Gas Engineers, by full-time training and students desiring to take advantage of it must enrol for the whole Course. Applications to attend a portion only of the Course will not be considered by the Ministry of Labour and National Service for awards under the Further Education and Training Scheme.

Well-designed Stands at the Ideal Home Exhibition

A brief review of the Gas Industry's contribution to the Daily Mail Ideal Home Exhibition was given in the " GAS JOURNAL *" of March 12; we now publish photographs of three of the most important stands at that exhibition. The impressive frontage of the British Gas Council's exhibit with its Eric Fraser poster over the entrance is shown at the left. This stand and that of the Society of British Gas Industries contained an exhaustive display of cookers, fires, water heaters, washing machines, &c., and was a source of considerable interest to visitors. Below are the stands of Electrolux, Ltd., and Ascot Gas Water Heaters, Ltd. Both were attractively designed and contained a representative selection of each manufacturers' products.*

Extendible Houses

Last week Mr. Clough Williams-Ellis, F.R.I.B.A., opened an exhibition of Duplex and Extendible Houses at the Housing Centre in Suffolk Street, London. Plans and photographs were shown of the pair of convertible houses at West Humble in Surrey which we have already described at length in " GAS SERVICE," and also further examples of this method of relieving the present housing shortage with a limited expenditure, while leaving an opportunity for raising standards as soon as conditions permit.

A Duplex house, built as two small flats and later convertible into a three-bedroomed two-storey dwelling, was included among the demonstration houses designed by the Government Ministries concerned as a guide for local authorities. Plans of this were on view and also an example of the extendible houses designed to include the essential requirements immediately, but so that extra rooms may be added later, when restrictions are lifted. These houses, it is confidently claimed, save materials and labour during the present crisis and provide for the needs of younger families, for the house can " grow " with the growth of the family. Mr. Clough Williams-Ellis warmly commended these plans as an alternative to shoddy building with cheap materials to keep within the present price limit.

Also on view at the Housing Centre was some of the equipment used in the convertible house at West Humble in the special demonstration kitchen arranged by the Women's Gas Council. Appliances shown included an automatic gas boiler for water heating by Thomas Potterton, Ltd., a Cannon gas cooker, an Electrolux gas-operated refrigerator, an Ascot instantaneous water-heater, a towel rail and portable fire by Friedman-Athill, Ltd., a Dean gas copper, and a Ranalah airing cabinet.

Institution President Honoured

MR. G. C. PEARSON, Engineer-in-Chief of the City of Birmingham Gas Department, was the guest of honour at a luncheon held at the Queen's Hotel, Birmingham, on Mar. 20 by the Midland Association of Gas Engineers and Managers in celebration of his Presidency this year of the Institution of Gas Engineers. Mr. G. P. Mitchell (Worcester), President of the Association, presided, and the guests included Dr. Harold Hartley, Vice-President, and Dr. W. T. K. Braunholtz, Secretary of the Institution, Sir Ernest Smith, and Mr. A. W. Smith and Dr. H. G. Colman, former chiefs of the Birmingham Gas Department.

The **President,** proposing the toast of the guest of honour, recalled that Mr. Pearson entered the service of the Birmingham undertaking 47 years ago, and was fortunate in receiving his training under Dr. Colman and Dr. Davidson. It was clear that he took full advantage of his opportunities, for 12 years later he was appointed Superintendent of the Coal Test Works, where at that time tests were made on all the coal carbonized by the Department. Three years later he was appointed Assistant Engineer at the Windsor Street Works, the largest manufacturing station of the undertaking. The time spent in that office included the years of the first world war, and at the conclusion of hostilities he was appointed Engineer, a position that entailed many important decisions as to the reconstruction and development of the works to meet the ever-increasing demand for gas. In 1936, on the retirement of Mr. Tomlinson, the Gas Committee selected Mr. Pearson as successor to the long line of worthy Engineers-in-Chief which the Department had had.

Mr. Pearson had from time to time shown his keen interest in the Industry by Papers on the work he had undertaken, not only to the Junior Association and the Midland Association, but to the Institution of Gas Engineers, which recognized his ability by awarding him the Silver Medal. During the short period he had known him, he had been ever ready to assist any member in distress. His quiet, gentlemanly manner was reflected in the organization under his charge, which was an object lesson to younger members in matters of control and management of a successful gas undertaking.

Dr. **H. G. Colman** said he had known Mr. Pearson ever since his entry into the Gas Industry, when he came to him in 1901 as Assistant at the Saltley Works, and the eminence he had attained confirmed that the impression he formed of him in those early days was well founded. He had watched his gradual progress during those 47 years, and he thought it was a lesson to all of them. He had watched the development of his intellect and his capacities with the greatest interest and admiration, and he wished him a most successful time in presiding over the meeting of the Institution which was to be held this year at Birmingham.

Mr. **A. W. Smith** said he was very glad to have the opportunity of paying his tribute to the guest of honour, whom he had known longer than anyone else in the room apart from Dr. Colman. He knew him when he first came into the Industry—a fair haired, blue-eyed boy, the delight of the ladies at that time—and he had known him through the vicissitudes of time. When he was striving up the ladder of success he was stricken with an illness with a high mortality rate, but happily he made a complete recovery and he became an able leader of men. He had met him and his family socially, and knew all there was to be known about him. He had the greatest admiration and affection for him, and joined heartily in congratulating him on his election as President of the Institution.

Sir **Ernest Smith,** who also supported the toast, said it was a real delight to come to Birmingham and pay tribute to George Pearson, not only because of his Presidency of the Institution, but for all the Gas Industry owed to him. The Birmingham undertaking was typical of all that was best in the Industry, and in saying that, one obviously implied the people who were responsible for its conduct. The Industry had attained its greatness by its efficiency, its relationship with the workers, and its general results, and he thought that was recognized in the fact that the last of the great utilities to come under consideration for nationalization happened to be the Gas Industry. Up to recent years Mr. Pearson had not attended meetings very frequently or travelled about the country on golf exercises, but he had stuck to his job and helped to make the Birmingham undertaking what it was to-day. He had always been impressed by his keenness and enthusiasm and the way he had stuck to his job.

The toast was accorded with musical honours, led by Mr. George Helps.

Mr. **Pearson,** in reply, said he was greatly honoured by the previous speakers and he was particularly grateful to Dr. Colman, to whom he was indebted for shaping his character in his earlier days. Another thing that formed his character was his close touch with Mr. A. W. Smith, who was a most delightful chief. For some years he also worked with Dr. E. W. (now Sir Ernest) Smith, whose influence moulded his character still further.

As had already been announced, this year's meeting of the Institution of Gas Engineers was to be held in Birmingham, and he hoped he would be well supported. The Institution had existed since about 1864 but in all those years, although it had had two Presidents from Birmingham, it had never held its meeting in the city before, and he therefore wanted to make the 1947 meeting an appropriate success. Institution Week would open with the S.B.G.I. golf competitions on the Monday, with a meeting of the Murdoch Lodge in the evening, and a heavy programme of technical, business, and social engagements would end with a day out in the country on the Friday, with a block booking for "Romeo and Juliet" at the Memorial Theatre at Stratford in the evening.

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25 Years of Service

It is always pleasant to record a true success story, particularly when it concerns people closely connected with the Gas Industry. Such a story is that of Abbott, Birks & Co., Ltd., whose business has progressed steadily from its humble beginning and whose 25th anniversary was recently celebrated.

The firm was founded by Mr. C. D. Birks, who had received considerable gas-works experience at Bradford under Mr. Charles Wood, and office premises were taken in Newington Causeway, Mr. Birks being assisted only by one clerk. He was joined shortly afterwards by his brother, Mr. Norman Birks, who brought with him engineering experience of a more general nature. The present General Manager, Mr. W. Rowe, was also an early arrival, commencing as a packer in the warehouse and running errands. Such apparatus as suction cleansers, leak testers and force pumps constituted the bulk of the production in the early days; now the firm specializes in a range of tools and equipment for the gas, water and electrical engineer. Although the war years brought difficulties of supply, little air raid damage was sustained and Abbirko House, in Blackfriars Road, to which the firm moved in 1934 remains in intact solitude amid surrounding havoc. A subsidiary company, Abboflex, Ltd., was formed in 1944.

The Silver Jubilee Dinner.

To celebrate the anniversary the Directors invited 45 members of their staff to dinner at the Elephant and Castle Hotel and later to a show at the Palladium. Mr. C. D. Birks paid tribute to the long, loyal, and excellent service of Mr. Rowe and Mr. G. Castle, Chief Clerk (the latter joined the Company on the opening day 25 years ago), and thanked the staff for their continued efforts throughout the war. They had, he said, maintained and often enhanced the goodwill and reputation of the firm in the Gas Industry by the way in which they had done their job, no matter what their capacity. A welcome was given to those recently returned from the Services, among them Major L. W. Dunn, T.D., son of the late Mr. W. T. Dunn, one-time Secretary of the Institution of Gas Engineers, and also Mr. J. B. W. Birks, D.F.C., M.A., son of Mr. Norman Birks. On behalf of the employees, Mr. Rowe presented the Directors with inscribed silver tankards to mark the occasion.

The Scottish Business of the British Aluminium Co., Ltd., will from July 1 be transacted through their own Scottish branch office to be opened in Glasgow. Alexander Brown & Co., who have acted as the selling agents of the British Aluminium Co. in Scotland for over 50 years, will relinquish the agency but will continue to act as principal stockists in Scotland for the products of the Company which they have been handling in the past. The Scottish branch office of the British Aluminium Co. will be located at the same address as Alexander Brown & Co., 113, West Regent Street, Glasgow, C.2. Mr. Peter J. Ferguson has been appointed Manager of the new branch. After July 1 the British Aluminiun Co. will undertake customers' orders for bulk quantities while Alexander Brown & Co. will accept orders for execution from stock at their warehouse at 41, York Street, Glasgow, C.2.

Before and After Nationalization

By ARBITER

The Author, who has spent a lifetime in the Gas Industry, surveys in this article the existing commercial and financial structure of the Industry under private enterprise. In a second instalment he will discuss the impact of nationalization upon that structure.

IT is necessary to review legislation so far as it affects the Gas Industry in order to make clear to members of the present Government and the general public the safeguards on which Parliament has insisted to protect users of gas. Legislation covers two distinct periods. (*a*) 1847-1920, and (*b*) 1920 to date.

Before 1847 gas was being supplied by private companies. The Gas Light and Coke Company were the pioneers in 1812. There are to-day two distinct classes of suppliers (*a*) private companies, and (*b*) local authorities. The former are divided into statutory and non-statutory undertakings, with minor differences and provisions which apply to all suppliers. Anyone can study the details in an admirable publication now in its seventh edition—" Michael and Will on the Law Relating to Gas and Water."

Statutory companies have private Acts subject to the over-riding general Acts in addition to which there are a few other Acts, *e.g.*, the Sale of Gas Act, 1859, and the Companies Clauses Act of 1845, both most important. The latter Act governs the administrative side and sets out in much detail particulars as to the conduct of directors and officials and the rights of shareholders.

Three Types of Companies

Suppliers of gas began to appear in the early part of the nineteenth century and Private and Special Acts gave much freedom without restriction as to price and gave no monopoly of supply; but to-day strict and rigid control obtains. A gradual evolution has produced three distinct types of statutory gas companies: (1) Maximum dividend companies; (2) standard price and dividend companies; and (3) basic price companies.

The maximum dividend company was allowed a maximum dividend of 10% on its original capital and 7% on its additional capital but was restricted as to the amount of additional capital sanctioned by Parliament to the requirements to cover a period of about seven years, and by such means the suppliers had to come back to Parliament. Thus the suppliers had to give an account of their stewardship to Parliament in order to get the necessary monies to continue their duty and obligations to the public.

The sliding scale companies came into being in 1875. The Commercial Gas Company's 1875 Act was the first, followed by the Gas Light and Coke Company and the South Metropolitan Company in 1876. These companies convinced Parliament that the maximum dividend principle was no incentive to cheapen gas, for, provided the maximum price permitted was not exceeded, the dividend was secured but could not be increased except as to the payment of back dividends, rarely exercised. The effect of the sliding scale proposal was to give the consumer some benefit emanating from skill, economy, and good administration. The employees where co-partnerships schemes operate got a proportionate advantage.

The standard price having been fixed by Parliament after due enquiry by Committees of both Houses operated beneficially to shareholder, consumer, and employee in way best illustrated by the following typical manner:

Standard price (say) 3s. Standard dividend 3½%. Sliding scale—1d. increase or decrease in price per 1,000 cu.ft. affecting dividend by 2s. 6d.%.

Selling price (say) 2s. 11d. Dividend payable £3 12s. 6d.%, or selling price (say) 3s. 1d. Dividend payable £3 7s. 6d.%.

The 1914-18 war affected costs to such an extent that in 1918 a Select Committee set up by Parliament came to the conclusion that some concession should be made to the shareholders governed by price and as a result the Statutory Undertaking (Temporary Increase of Charges) Act of 1918 was passed. The effect was to allow, after further enquiry and examination of the accounts and circumstances by the appropriate Government Department, the payment of a dividend, with due care and management, at the rate of three-quarters of the standard or maximum rate if any, or three-quarters of the pre-war rate of dividend, on the average of three pre-war years, whichever was the lower. Assuming a pre-war rate of dividend payable by a standard scale company of 6% per annum, the dividend payable if earned would be £2 12s. 6d.% on the 3½% capital. Local authorities were entitled to make representations before an Order was issued and the Order had to be confirmed by Parliament.

The South Metropolitan Company in 1920 promoted a Bill, which became an Act, which varied the sliding scale principles and was approved by a Joint Committee of both Houses of Parliament, and many companies now operate under its provisions, varied to suit the particular circumstances of individual cases. A basic price with a basic dividend is fixed, the basic dividend *ab initio* representing a fair return on the Ordinary capital invested. When gas can be sold at a figure below the basic price benefits are divisible between shareholders, consumers and co-partners.

Obligations of Gas Companies

Consumers within a specified distance of any main may demand a supply of gas. Price, purity, pressure, testing and measure, and, above all, quality, are all covered by protective clauses, with penalties in default.

Controls relating to gas companies include the following:

(1) *Financial.—Capital.*—The fixation of the amount of capital to be raised from time to time and the method of raising such capital.

Ordinary capital has to be raised by tender, and all premiums obtained inure for the benefit of the consumer. The average cost of all capital in a well conducted and managed company was below 5%. Local authorities' issues were usually based, after the 1914-18 war, on a 5% basis. The limitation of dividends in relation to price has been dealt with.

The permitted reserves are usually: (1) renewal fund; (2) special purposes fund; and (3) reserve fund. In the majority of companies operating as sliding scale or basic price companies the reserve fund has been accumulated out of profits which could have been distributed as dividends in past years.

The limitation of carry-forward is usually one year's statutory dividend after payment of prior charges (loan capital).

Voluntary obligations assumed by some gas companies include the provision of (i) pensions; (ii) co-partnership, *i.e.*, a payment by way of bonus of a proportion of divisible profits; (iii) welfare funds; (iv) approved National Health societies; and (v) arrangements for the Federation of Gas Employers and employees to settle disputes and rates of pay (including sick pay).

The pension fund benefits are provided by equal contributions by company and members, usually with a guarantee as to solvency by the company. The co-partnership bonus depends upon the rate of dividend distributed to the Ordinary shareholders. Co-partners, where there is such a scheme, are shareholders in the fullest sense with the right to vote. The welfare fund guaranteed by the company, with contributions by members and the company, covers medical treatment to the wives of employees. The approved society follows the benefits authorized by the National Health Acts. The cost of administration is borne wholly by the company, and is subject in all respects to the provisions of the National Insurance Acts.

New Departure in Street Lighting

By the use of a new gas lamp, based on designs by Southport's Gas Engineer, Mr. H. J. Risby, it has been found possible, we are informed, to visualize a considerable improvement in street lighting at Southport. The new lamp is an entirely new departure from existing designs. Mr. Risby says that illumination from the lamp is equal to that hitherto obtainable only from high pressure lighting. Over 140 of these lamps are to be installed in Southport streets in the near future.

At present two of the lamps, giving 9,000 candlepower, are in use at the corner of Church Street and Marlborough Road. Members of Southport Lighting Committee were particularly impressed and produced newspapers which they were able to read with ease by the light of the lamps, and colour cards, with the colours unchanged under the almost natural light.

Development of the lamp has been in the hands of Mr. C. Sugg, Technical Director of Messrs. William Sugg & Co., of London.

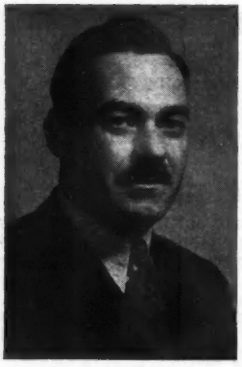
The design of the reflectors, the type of glass used, and the use of strip mantles based on a lamp designed by the South Metropolitan Gas Company, by whom Mr. Risby was at one time employed, contribute to the success of the lamp. The number of mantles is the same as in the former type of lamp and the amount of gas used, we understand, is only slightly more.

Councillor W. Berwick, Chairman of Southport Lighting Committee, has remarked that the " Southport " lamp is second to none and even those members who unwittingly favour electricity consider the illumination " quite remarkable."

The decision to install the large number of lamps is partly due to the urgent need for general replacements in the town. Lack of maintenance during the war and the effect of sea air have resulted in many gas lamps in the town being corroded, and to prevent these falling into the road nearly 100 have been removed.

" The lamp is a great step forward in gas lighting," said Councillor Berwick. " I am certain there is nothing like it in the country. The improvement will be appreciated by the people of Southport when street lighting returns."

Members of the Association of Public Lighting Engineers will see the " Southport " lamp in use when they hold their conference at Southport in September.



Load Development and Distribution in the Ascot Area*

By J. W. KAYE,

Engineer and Manager, Gas Department, Ascot Gas and Electricity Company

THE Ascot Company's gas supply area is large, straggling, and almost entirely rural, having even to-day, quite a small total output in comparison with most of the undertakings serving country towns. In common with other undertakings operating entirely in rural areas, unless economy in production and a good load factor are maintained on the distribution system, the cost of the commodity is likely to rise to an uneconomic, if not prohibitive, figure. So far as the capital cost required to operate an undertaking of this type is concerned, this must always be relatively high—judged by the standard of capital spent per million cu. ft. of output—when compared with undertakings operating in densely populated areas or towns of similar size. In addition, the character of a rural area demands different treatment from that of the built-up area if the maximum business is to be obtained, and it is hoped to show where some of these differences arise so far as they apply to the Ascot Company's Area.

Production Plant

When I first knew the Ascot undertaking in 1930, the production plant was of the traditional small country gasworks type. There was a small hand-charged horizontal retort house consisting of six beds of retorts, three beds being designed for eight retorts in three tiers, and two beds of six retorts.

Coal was unloaded and wheeled into the retort house by hand, the retorts were charged, and the coke discharged and wheeled away—all by hand. No attempt was made to introduce machinery for the handling of materials for manufacturing purposes. Only the scantiest of wet and dry purification plant was available, and inadequate storage for the output of the undertaking. At this time the annual output was round about 100 million cu. ft., and even at this comparatively small output the plant was stretched beyond reasonable limits during peak periods.

The supply area was considerably undeveloped, and it was therefore obvious that before any load development could take place, adequate production capacity would have to be the first step to be considered.

In 1930-31, therefore, new carbonizing plant was installed. The choice of plant was rather limited because of the restricted area available owing to the need for keeping the existing plant at work. Therefore the carbonizing plant chosen must be one which would require the minimum amount of ground space—and so continuous vertical retorts were installed.

A siding ran conveniently alongside the new coal gas plant and trucks were unloaded direct into elevators conveying the coal to overhead storage hoppers.

A coke grading and screening plant was installed at the same time, and upon completion of the gasmaking plant over successive years until 1933, additional purification plant was installed, and the storage capacity was doubled by building a three-lift spiral guided gasholder into an existing tank which had housed only a single lift column-guided holder.

By 1932, Ascot had reached the stage where production plant was surplus to requirements, and so our problem became one of "load development on the district" in order to ensure efficiency and economy in production. I would not like to create the impression that this surplus of production was sufficient to cover the total development which we later succeeded in attaining.

At least two further installations of similar coal gas plant, and more purifying and storage plant, have been necessary. In fact, it would be true to say that since 1932 the works have been almost entirely re-built.

The object throughout, so far as works production is concerned, has been to aim at efficiency and economical manufacturing costs, which are of prime importance for the development of a rural area, as our distribution costs must of necessity be high—and so are our capital costs. Therefore the old adage applies with even greater force, that money saved in the retort house is spent on the district.

Area of Supply

The area of supply covers that part of East Berkshire embracing Sunningdale, Sunninghill, Ascot and Bracknell, bordering the Windsor Forest, and continuing East of Bray and Maidenhead to Waltham St. Lawrence. A considerable part of the area extends beyond the Berkshire border into Surrey, embracing Bagshot, Windlesham, Lightwater and Chobham; the total area being approximately 80 square miles.

The period of load development covered by this Paper dates from 1932, when the output of the undertaking was approximately 100 million cu. ft. per annum, until the present date when the output is approximately 420 million cu. ft. per annum. It is interesting to note the following comparison with regard to the total population and gas consumers, also the average consumption per consumer, for the period under review.

	Total population	Total gas consumers			Average consumption per consumer	
		Ord.	Slot	Total	Ord.	Slot
1932 ...	27,497	1,478	2,033	3,511	250	69
1946 ...	31,510	2,712	4,905	7,617	338	135

From a study of these comparisons it will be clear that the policy for development during the period has been broadly carried out under the following two main headings:—

(1) The encouragement of increased annual consumption per consumer.

(2) A drive to cover all the undeveloped parts of the area.

A peculiarity of this thinly populated area was the almost entire absence of any industrial load. Apart from one or two bakers and an odd fish fryer or two, the nearest approach to an industrial load was to be obtained from private boarding schools and one or two large hotels.

One of our larger consumers is the Ascot Racecourse which, until quite recently, used 2,710 therms per annum in the period covered by four consecutive days' racing, a bad load factor if ever there was one, but fortunately one which occurred in the early summer and therefore did not impose itself upon our peak loads.

Consumption per Consumer

The area, as a whole, has no residential localities in the accepted sense, but consists of large houses and mansions surrounded by estates of 200 acres or more of park, dairy-farm and agricultural land; and small houses in the villages, occupied chiefly by working class people. These latter fall into two classes of employment, namely, farming and horticulture, and building trades.

* Paper presented to the Southern Association of Gas Engineers and Managers (Eastern District), Feb. 25.

One means of attaining increased consumptions was by encouraging the greater use of gas for domestic purposes in these large houses, which may be regarded in this type of area as the counterpart of the industrial load in thickly populated areas.

To achieve this, attractive tariffs were offered for general domestic use, and a special tariff for gas-fired central heating and domestic hot water installations. This latter tariff consisted of a service charge of which the principal factor was based upon the hourly rated demand of the appliance, with a commodity charge of 4½d. per therm. In adopting this tariff, the danger of the possibility of heavily loaded mains over short periods was foreseen, and it was largely for this reason, combined with the special importance in a rural area of trying to level out the loads, that the Standing Charge was based upon the demand. The advantages were twofold. Firstly, the consumer was only attracted to a gas-fired hot water installation which had ample storage capacity to maintain a good hot water service by using a comparatively low hourly rated appliance, and, secondly, gas-operated central heating was only attractive, when operated over long periods of the day. Usually these central heating installations operated by clock control over a period of 16-18 hours per day, coming on at approximately 6 a.m., before the breakfast load, and continuing until 11 o'clock at night.

From time to time information has been obtained from typical installations in large houses on this district and estimates of individual load factors made, but the information is somewhat contradictory and is really of very little use, insofar as the load affects either production or distribution. These individual loads have been found to vary from 37% to 68%. The differences may be due to the fact that domestic hot water is included in consumptions taken for estimation, and indeed, the central heating load itself in private houses varies very considerably due to the differing habits of the occupants.

As was noted from the table, an average increased consumption per consumer was also obtained from the slot consumers in the area, which, of course, comprise the working class people in the smaller houses.

This was the result of a determined effort to replace all-black "slot" cookers with the more modern enamelled type, whilst at the same time, opportunity was taken of introducing to them labour saving appliances such as gas washboilers, gas pokers and gas irons.

Hire Purchase

A special campaign for this purpose was launched by offering to all slot consumers attractive, medium priced, vitreous enamelled cookers on five years hire purchase terms consisting of an initial deposit of £1, and subsequent payments of 6d. per week over a period of five years. This cooker became known as the "Sixpence-per-week Hire Purchase Cooker," and was very soon the popular choice of the large majority of our slot consumers.

At the same time similar attractive terms were offered to these consumers for the assisted purchase of washboilers, while gas pokers for all downstairs ignition points were provided without charge.

Soon the Company found themselves with an increased number of credit accounts amongst consumers whose normal method of purchasing was to pay cash on demand. In order, therefore, to overcome embarrassment, both to this type of consumer, and to the Company, the "Home Safe" scheme was introduced. Any cash consumer who wished to do so could obtain from the Company without charge a "Home Safe" Account Box, and many consumers preferred to deposit their sixpence or shilling per week, as the case may be, into these safes, which were opened and the cash collected by the slot collectors in the normal course of their visits. Although this method was first introduced for the benefit and convenience of slot consumers, the Company soon found that considerable advantage was gained, because it reduced book-keeping and the rendering of accounts and reminders for such small amounts to a minimum. In practice it was found that very few Home Safes opened by the slot collectors did not contain more than the sum due to be collected by the Company.

In 1932 the area of supply was only partly covered by 65 miles of low pressure mains, many being small mains laid for long distances, with the inevitable dwindling supply of gas towards the outermost parts of the area. Unfortunately, the Company owned no land at suitable points which were, or could be, scheduled for the building of district gasholders, and by 1932 there seemed to be very little prospect of obtaining land for this purpose.

In addition, because the distances to be covered by new mains were great in comparison with the loads to be expected, and it would appear that considerable capacity would be desirable in view of future developments, it was decided that a scheme of high pressure distribution should be provided, with the objects of (a) making provision for supplies to be afforded to these undeveloped villages within our area, and (b) improving the gas supplies to the weaker parts of the area already supplied by low pressure mains, by feeding in from the high pressure to low pressure system through district governors.

Expansion of Distribution System

The high pressure distribution system took the form of two large loops forking out from our works. There were 18 miles of high pressure mains constructed of weldless steel pipes, coated and wrapped, with welded joints, and the pipes were air-tested when laid, to a pressure of 50 lb. per sq. in. The high pressure system was intended to be worked at pressures up to 30 lb. per sq. in. and the compressing plant was installed to pump against this maximum pressure.

It is of some interest to note that the villages of Chobham and West End on the Surrey side have been supplied through one single high pressure main with no means of standby storage of any kind throughout the past 12 years, during which time the supply has never been interrupted.

The greater part of our area is most adaptable for high pressure distribution mains, owing to the long lengths of open country interspersed with small hamlets and villages. Also the fact that practically the whole of the mains are laid in greenswards well clear of the roadway is an advantage in that, due to the absence of vibration from heavy traffic, the mains suffer less from leakage, thus saving considerable costs in maintenance so far as a rural area is concerned. In addition, the costs of laying mains are considerably reduced by the absence of reinstatement charges in respect of road surfaces and footpaths.

Wherever villages and small built-up localities occurred, distribution proceeded in the normal way under low pressure conditions, and 37 miles of mains have been laid, which are fed through district governors from the high pressure system. The present mileage of mains in all is 120 miles. Where occasional buildings, farms, &c., occurred on the high pressure distribution run, service tappings were taken direct off the high pressure main and a reducing service regulator fitted on the meter inlet at the point of entry to the building.

Although the bulk of development was taking place in the new areas by the addition of new consumers in large numbers, a fair proportion of development was also going on in the old low pressure area, particularly in the small township of Bracknell—so much so, that development overran mains capacity at three peak periods of the day, namely, breakfast, lunchtime and evening loads.

Local Boosting

We were, therefore, faced with the alternative of providing a new feeder from our works, which entailed a length of approximately eight miles of mains, or some method of local boosting to improve these peak load pressures, and in view of the high capital cost in providing a new feeder, it was decided to try to obtain a small site which would house compressor plant and high pressure storage. A piece of land, about 30 ft. by 40 ft., was obtained, and a small building erected in which to house two Direct Coupled electrically-driven two-stage Compressors. These Compressors were connected on the inlet to the low pressure distribution mains, and on the outlet were two storage cylinders size 30 ft. by 9 ft., which when filled with gas to 100 lb./sq. in., contained a storage of 25,000 cu. ft. The motors were controlled by automatic starting panels which were operated by a clock-controlled switch and were set to start the machinery at midnight and to stop it at 6 a.m. the following morning.

(To be continued.)

The Gas Industry *vis à vis* the Coke Oven Industry

[From a Special Correspondent]

(*Continued from p. 572*)

The Treatment of the Volatile Products from Coal

Just as in the carbonization of coal, so in the treatment of the gaseous products, the same essential processes are carried out in both the coke oven and the gas industries. The viewpoint in the former industry is that the plant functions for the recovery of by-products, whereas with the latter the end in view is the purification of gas to a standard suitable for the provision of a satisfactory service. It may be that this difference in outlook accounts for the fact that the treatment given to the gas differs in several respects in these two branches of the carbonizing industry. It may be noted, too, that there may be difficulties in terminology at various stages of the art.

Gas Collection

With horizontal retorts gas-works procedure is to collect the gas in hydraulic mains supported above the retort settings. Aided by the pull exerted by the exhauster the gas leaves the retorts via ascension pipes, which are sealed in a reservoir of liquor maintained at a constant level in the main by means of an overflow. The gas from the ascension pipes bubbles through the liquor, being partially cooled thereby, but because of the hydraulic seal there is a marked unevenness in the pressure conditions in the retort. In cooling, condensation of some of the tar and liquor takes place, which are run off automatically with any liquor supplied to tar wells, in which they are separated. This system has the advantage that it can be completely automatic in action, each retort being isolated by the seal. Thus when the retort door is opened to push a " burnt-off " charge, gas from the main cannot escape down the ascension pipe.

A disadvantage of the system is that the ascension pipes readily tend to become stopped up and retort doors and mouthpieces become dirty with the very heavy tar which collects because of the cooling and refluxing effects taking place in the long ascension pipe. The pipes therefore require frequent and conscientious auguring to maintain a free path for the gases.

This disadvantage has been overcome by the scrubber standpipe system, in which the long ascension pipe has been replaced by a short neck piece connecting each retort mouthpiece into a vertical standpipe adjacent to each column of retorts. Liquor is supplied from a jet at the top of the standpipe, and by contact with the gas rising up the pipe cools it adiabatically to about 85° C. The standpipe can be sealed from the retort by a flap-valve at the end of the neck-piece. This system successfully overcomes the main disadvantage of the ascension pipe and brings about the precipitation of a large proportion of the total tar at an early stage. The tar and liquor flow from the bottom of the standpipe to a separating tank, from which the liquor with make-up is recirculated to the standpipe sprays.

The system of scrubber standpipes for the primary collection of gas from horizontal retorts is akin to the standard procedure adopted with vertical retorts, both continuous and intermittent, and to the procedure in the coke oven industry. In those systems the gas rising from the top of the retort or oven passes via a bridge-pipe to a gas collecting main and is subjected to a heavy spray of liquor in the " downtake." The retort or oven may be isolated from the collecting main by a hot gas valve which is water sealed when closed. The gas passing along the collecting main again passes through more sprays, and is quickly cooled adiabatically to about 85° C. As with scrubber standpipes on horizontal retorts this procedure brings down a large proportion of the tar at an early stage, but on coke oven plants it has the added advantage that fine coal escaping from the oven in the early stages of carbonization is precipitated and readily flushed from the mains.

A closed circulating system is adopted for the supply of liquor to the sprays both on vertical retort and in coke oven plants. With the former the hot tar and liquor runs from the collecting main to a separating tank, from which the liquor is pumped again to the sprays. The tar overflows to a tar tank.

On coke oven plants tar " bosches " are also provided on the collecting mains, in which an early separation of coal dust and pitch may take place. The gas passes from the collecting main with the hot tar and liquor to a " suction " main, at the end of which the tar and liquor pass into a " catch " tank. Here the main separation of liquor from tar takes place and from the tar there is a separation of solid matter which can be removed either mechanically by scraper bars or manually by rakes. The liquor separating in this tank is the main source, after screening, of the oven spray liquor, which is circulated at about 50 to 60 gall. per hour per ton of coal carbonized per day.

In all systems of spraying hot gas with liquor there is a continuous loss of water by evaporation into the gas. The loss can be made up with weak liquor from the primary gas coolers, but in order to avoid concentrating the fixed ammonium salts brought down with the excess liquor in the collecting main it is necessary to ensure that the make-up is considerably greater than the evaporative loss and that a bleed-off of liquor containing mainly fixed salts is maintained. This type of closed circulating system is common at coke oven plants, all free ammonia condensed in the primary coolers as weak liquor being returned to the gas. The system is now being adopted at some gas-works.

It is usual in coke oven practice to collect the gas at one side of a battery only, but it has been claimed that the addition of a compensating main on the other side has advantages. By the appropriate use of valves this system permits the gases from a freshly charged oven to circulate via the compensating main through the top free space of ovens approaching the end of their carbonizing period. It is claimed that among other benefits this system reduces scurf formation, keeps oven tops cooler, and increases the yield of benzole.

Gas Cooling and Condensing

In gas-works practice it is usual to carry out the cooling of the gas in one stage in condensers generally situated on the section side of the exhausters. On some works, particularly the smaller ones, atmospheric condensers are still to be found, but the general practice is to use condensers either with horizontal or with vertical water tubes. Because of their slightly greater efficiency water-tube condensers of the former type are sometimes preferred where the supply of cooling water is important.

At one gas-works[12] a system has been adopted whereby boiler feed water can be preheated to about 170° F. by heat interchange in a special condenser with the hottest gas from vertical retorts. About 26% of the heat in the gas is recovered in this way, representing about 1 therm per ton of coal carbonized.

On coke oven plants there are several features of gas cooling which are only occasionally found on gas-works. Of these the main ones are the use of water cooling systems and the use of both primary and secondary gas coolers, one on the inlet of exhausters and the other on the outlet of exhausters. It may be noted too that the term " coolers " is employed in the coke oven industry rather than " condensers."

Coke ovens are often situated where the available supply of water is limited or costly. As the water requirements are usually large it has been found advantageous to install water cooling systems of the evaporative type.

Water-tube coolers are standard practice and the vertical tube type is generally favoured because of the lower first cost and the ease of cleaning the tubes from the open top water chamber. The velocities of gas and water flowing countercurrent to each other are normally high, giving good overall heat transfer coefficients in modern designs. The cooling surface provided ranges from 30 to 60 sq. ft. per 1,000 cu.ft. of gas per hour, depending on the temperature conditions of the gas and water.

The primary coolers are designed to remove practically all the heat in the gas, the temperature of which is controlled at the cooler outlet to such a point that trouble due to the disposition of naphthalene and other solids can be avoided. This is commonly achieved by thermostatic control of the water supply.

Secondary coolers have become common practice on coke oven plants for several reasons. In the first place there is a marked rise in the temperature of the gas on passing through the exhausters because of the work done in compression. Then, where ammonia recovery by the semi-direct process is practised the gas is reheated before entering the saturators and it also gains heat arising from the reaction between ammonia and sulphuric acid. Furthermore, the gas may not be completely cooled in the primary coolers. Thus a combination of any of these circumstances make it desirable to complete the cooling of the gas in separate units.

Exhausters and Gas Pressure Governing

The bladed exhauster has been in use in the Gas Industry since its earliest days, and machines of this type are still in general favour. They are steady, reliable, and easy to maintain and give good service after many years. They are essentially machines for slow speed of operation, and because of this they occupy a considerable space. The limit of capacity for one unit is about 400,000 cu.ft. per hour. This type of machine suffers from the disadvantage that with the rotation of the blades marked fluctuations of both suction and pressure occur both on the inlet and on the outlet, but the " beat " is less violent with four-bladed than with two-bladed exhausters.

The Roots-blower type of exhauster, consisting of two interweaving rotors revolving in opposite directions with a cylindrical casing, may also be found in the Gas Industry, but where high volumetric output per unit of ground space is required the tendency is to install centrifugal type machines. These turbo-exhausters have not

[12] H. Hollings and N. K. Hutchinson, J.Inst.Fuel, 1935.

as yet been widely adopted in the Gas Industry, but are standard practice at coke oven plants. They are essentially high speed machines of a high degree of reliability, and because of the relatively small overall dimensions single units can be built for outputs of over 1,000,000 cu.ft. per hour. Gas is handled without pulsation and has a high proportion of its tar-fog content removed by these machines.

Turbo-exhausters may be driven by steam turbines or by electric motors, but where the volumetric throughput shows marked variations the former type of power is generally to be preferred because of its greater reliability and ease of speed control. On coke oven plants constant speed machines, either turbine or motor driven, may be employed because of the relative steadiness of gas output, but when exhausting from retort houses the hourly variations in gas production make it advantageous to regulate the speed of the exhauster by throttle governing on the steam supply of the turbine.

A review of power plant and machinery for exhausting and boosting gas has been given recently by L. J. Clark.[18] The performance characteristics of various types of machines with their associated prime movers has been stated with an indication of their most suitable application.

On gas-works it is the usual practice to supplement governing of the exhauster speed with governing in the retort house, and the still common type of governor is the direct-acting bell. The pressure to be controlled operates directly on a bell sealed in water and any movement of the bell is communicated directly to a valve. The modern practice widely adopted in the Coke Oven Industry and now being adopted by the Gas Industry is to use a relay type of governor, in which a independent source of power, either hydraulic or pneumatic, operates a valve, generally of the butterfly type. The supply of power to the valve is regulated by a mechanism sensitive to changes in the controlled pressure.

On modern coke oven plants it is desirable to maintain a pressure of 1-4 mm. water gauge on the collecting main, and for this purpose a relay type valve is used. Governing of the suction at the inlet of turbo-exhausters is also adopted by throttle governing of the steam supply to the turbine or by a butterfly valve in the inlet main.

[18] Paper to London and Southern District Junior Gas Association, April, 1946.

Radiation Ltd.

Statement by the Chairman, Mr. J. F. Davies, at the Annual Meeting, March 26

Stockholders will observe from the Directors' Report and Accounts that the gross dividends declared by the Subsidiary Companies for the year 1946, total £295,083 compared with £293,078 a year ago, a small increase of £2,005. I would point out that the more substantial increase in the net dividends this year from £146,539 to £162,296, is due to the lower rate at which income tax falls to be deducted from the dividends for the year under review. Adding to the net dividends the interest and transfer fees received (£574), and the balance brought forward from the previous year (£160,330), and deducting the net interim preference dividend (£17,944) already paid, there is a total amount of £305,256 available for distribution.

The balance of the preference dividend for the year will require £17,944, and your Directors recommend a dividend on the ordinary stock of 10 per cent. for the year, which will absorb £124,441, leaving a balance of £162,871 to be carried forward to next year's account.

On the assets side of the Radiation balance sheet the principal item is the investments in and the amounts owing by Subsidiary Companies which amount to £3,855,945, a decrease of £22,482 compared with last year's figures.

Importance of Reconstruction

Turning to the statement of combined assets and liabilities of the Subsidiary Companies, the total assets stand at £6,456,114, an increase of £15,187 compared with the total a year ago. The fixed assets, consisting of buildings, plant and machinery, show an increase of £195,599, representing expenditure of £282,644 during the year on the partial re-equipment of our factories, less depreciation of plant and buildings £87,045. It is not possible to assess the total cost of carrying out the re-equipment of factories and all other matters of reorganization and reconstruction which urgently require attention after six years of war, and for which a sum of £750,000 was set aside in 1943.

Stocks on hand and debtors show in the aggregate an increase of £762,087 over last year's figures. Investments and cash balances have decreased by £942,499, due to realizations necessary to provide the moneys required for factory equipment, additional stocks and increased debtor balances.

On the liabilities side of the combined statement the amount for sundry creditors, taxation and pension reserves has decreased by £86,013, and the balance due to the holding company is less by £22,482.

The balance to the credit of profit and loss account is £543,259 which, as stated, includes income less taxation, of £98,745 relating to trading of previous years in view of which non-recurring expenditure of £41,829 attributable to the change-over from war conditions has been written off against profits.

Production Difficulties

The call for our specialties is considerable and our factories are prepared to deal with a substantial addition to the volume of our trade, but under present conditions of shortages in so many vital directions it is not easy to cope efficiently with deliveries and increase production. It is only by an increase in our production that we can look for any improvement in results and, so long as the difficulties which face us to-day remain with us, there is need for continuance of a prudent financial policy.

The importance of the Gas Industry has been brought home to the average citizen during these last months more strikingly than ever. During the war the Industry did not spare itself in its remarkable contribution to the National effort and there was little opportunity for carrying out essential repairs to plant, for overhauls, and for making extensions. Nevertheless, despite the greatly increased demand for gas which has arisen, the Gas Industry has continued to meet in a most striking manner the claims made upon it by industrial and domestic consumers.

For reasons beyond the control of gas undertakings and their staffs, reductions in pressure have been necessary, but the manner in which the supply of gas has been maintained has won the admiration of all who are able to appreciate something of the difficulties which have had to be overcome. The Gas Industry is a great National asset and we are proud to have a modest part in its valuable service to the public.

Progress of Research

We have been able to contribute to that service by the work of our central laboratories which affects our activities in many directions. Since the close of hostilities we have been enabled to bring our staff of chemists, physicists and physical chemists, nearer to its pre-war strength and to increase materially the activities of that section of our organization. Increased accommodation and further equipment is being provided for them. It is through the senior executives of our laboratories that we are enabled to keep in close touch with the technical work of the many bodies and departments, both in this country and abroad, concerned with discoveries which go to the root of the use of such things as coal, gas and other forms of energy. Among other activities our laboratories perform the important task of enabling us to make use of basic discoveries by developing means of applying them to homely articles such as the gas cooker, and thus improve its efficiency and standard of performance. It is essential that the laboratory staff shall maintain a progressive outlook and last autumn we arranged for our research manager to visit the United States of America, in order to enable him to make personal contact with scientists and technicians there, and to obtain first-hand information in regard to development in the spheres of activity in which we are interested.

New Cooker Saves 20% Gas

Our technical staffs have designed for us a new gas cooker which we are about to introduce, and it is a remarkable tribute to their efforts that despite the improvements effected in recent years, this new gas cooker not only gives still better cooking but does so with a saving of 20 per cent. in the gas bill, that is a saving of one therm in every five which in these days is a factor of prime importance.

It is not only in the development of new and improved appliance design that we use our laboratories. It is due to their research work that we have been able to compound vitreous enamel finishes, which are resistant to the action of food acids, and which have earned for themselves a deservedly high reputation. It is characteristic of our cookers that after many years of hard service the enamel finish is as good as when the cooker was first put into use.

We are one of the largest makers of enamel frits in the country, and the results obtained by our research work have enabled us to improve our enamels and have provided information for effecting better process control. Some years ago we designed and erected special factories for the manufacture of these frits under conditions which would eliminate the danger to the operatives of silicosis. The application of the enamels in our enamelling factories is carried out under technical control based on the recommendations of our laboratory staff.

It only remains for me, on your behalf, to record our appreciation of the services of all those in our employment and our thanks to them for their loyal help.

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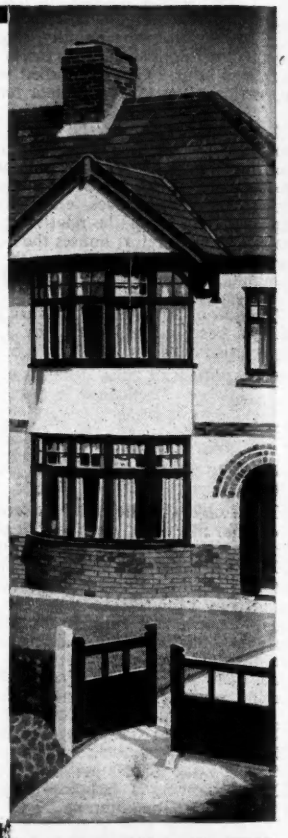

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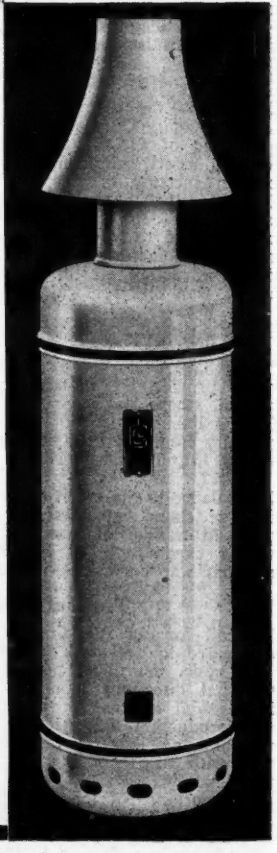

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Gas Undertakings' Results

Preston Gas Company.—Mr. S. Tagg, Chairman, told the annual meeting on Feb. 21 that sales constituted a record in the Company's 130 years' history. Extensions to plant were brought into operation in the spring and progress was made in the renovation of the existing plant. The completion of the new purifying plant had been unavoidably delayed. To meet additional demands, especially for industry, contracts had been placed for manufacturing plant, but this would not be available before the winter of 1948-9. The Company carbonized 38,000 tons more coal last year than in 1939 and supplied 51,500 tons of coke and breeze against 30,500 in 1939.

Stamford Gas Light and Coke Company, Ltd.—At the annual meeting on Feb. 20, at which Alderman J. S. Prior presided, it was revealed that the consumption of gas has more than doubled during the past 12 years. Sales of gas, which showed a further 9.5% on the 1945 figure, were 50.6% more than in 1941. Although the price of coal had risen by an average of 3s. 6d. per ton and costs of labour and materials had increased appreciably, the price of gas remained unchanged. A scheme of extensions was approved by the Ministry of Fuel and Power in July, but the new plant would not be ready for gas making before the winter of 1948. A final dividend of 7% left a balance of £4,183.

Croydon Gas Company.—Gas sales during 1946 showed an increase over the previous year of 14.2%. Net revenue, after providing for all fixed charges and allocations of £3,300 to the insurance fund and £23,500 to renewal fund, is £149,201, against £107,329 for the previous year. Dividends are maintained at 5% on the Maximum Dividend stock and 6% on Sliding Scale Stock, and the carry-forward is £128,180, compared with £84,207 brought in. The Directors' report states that the price of gas has been reduced as from the beginning of 1947 by 0.6d. per therm to 12.6d. per therm. Mr. Henry Woodall, who has been a Director since 1916 and Deputy Chairman since 1932, has retired. Mr. H. Williams has been appointed Deputy Chairman, and Mr. W. J. Sandeman has been elected to the Board.

Cardiff Gas Light and Coke Company.—Gross earnings for the year ended Dec. 31 amounted to £64,438, against £63,155 for the previous year, and a final dividend of 4% makes a total of 6½% for the year, against 6%. Gas sales in 1946 were 49½ million cu.ft. less than in 1945, or a reduction of 2.13%. The decrease was more than accounted for by the cessation of work in factories employed on warlike munitions and supplies, which represented a decrease of 28% in the industrial load, and so far had peacetime demands increased that for the second half of the year gas sales were 2% above those for the same period of 1945. In his statement issued with the report and accounts, Mr. R. H. Williams, the Chairman, announced a reduction of three-farthings per therm in the price of gas from March, 1947. The Company has completed an agreement with Guest Keen Baldwins, Ltd., for a supply of coke oven gas from their East Moors works, and the necessary plant and mains are now being laid. A new carburetted water gas plant has been erected at the Grangetown works and will be in use at an early date. In the course of his statement, the Chairman said that at no time in the long history of the Company have prospects appeared more promising of a highly successful development and a remunerative future for the undertaking.

Alliance and Dublin Consumers' Gas Company.—The surplus on revenue account for the half-year to Dec. 31 was £61,072. Dividend on the Consolidated Ordinary stock is continued at 4% per annum, absorbing £35,348, and leaving a balance of £43,330. The Directors report that the difficulty of securing adequate and satisfactory fuel supplies has been governed by the serious fuel position in Great Britain, and the only quality of coal obtainable by the Company has been of a grade normally considered impossible to use in gas plants.

Reading Gas Company.—Gas sales constituted a record for the undertaking and showed an increase of 6.23% over the previous year. The balance carried to profit and loss account was £35,826 against £37,742. Payment of dividends at standard rates leaves £53,898 to be carried forward, against £50,196 brought in. An extraordinary general meeting following the annual meeting on Feb. 27 sanctioned the issue of the balance of capital remaining to be issued and approved an application to the Ministry of Fuel and Power for an order to extend the capital and borrowing powers of the Company, further capital being required to meet the cost of extensions.

Newcastle-upon-Tyne and Gateshead Gas Company.—Revenue for 1946 was £2,452,967 and expenditure was £2,226,856, leaving as profit for the year £226,111, compared with £222,334 for 1945. A final Ordinary dividend of £2 17s. 6d.% has been declared, making £5 7s. 6d.% for the year, the same as before, and the carry-forward is increased by £23,066 to £142,468. The year again produced a record in the quantity of gas sold, which exceeded that of the last pre-war year by 60%. With the inevitable hiatus in plant extension and renewal brought about by the war the Company's success in meeting demands on such a scale must, says the Directors' report, be regarded as no small achievement. The upward tendency in sales continues, but difficulties in carrying out major works schemes do not diminish. A great deal of work has been done in providing supplies of gas to new housing estates and in addition a project postponed owing to the outbreak of the war has been realized in the extension of supplies to Ponteland and the Darras Hall Estate.

Portsmouth and Gosport Gas Company.—The balance carried to net revenue account for 1946 is £98,573, compared with £99,535 for the previous year. Gas sales produced £928,511, against £833,121, the volume sold being 18,628,963 therms, an increase of 1,057,526 therms. The Directors, in their report, state that the problem of obtaining sufficient coal supplies to meet exceptional demands for gas has been a matter of acute anxiety. Marked progress has been made in repairs and renovations of manufacturing and distribution plant, and although much has yet to be accomplished, the arrears brought about by the war are being steadily overtaken. The supply of gas appliances for both industrial and domestic purposes, almost discontinued during the war, has shown progressive improvement, enabling the Company to meet a proportion of long-standing orders from consumers. Terms have been agreed with the Petersfield and Selsey Gas Company for a bulk supply of gas by the Portsmouth Company to the adjoining Petersfield area and the laying of the necessary connecting main will be carried out this year. Dividend on the Consolidated stock is maintained at 7½%, and £25,840 is carried forward, against £25,804 brought in.

Eastbourne Gas Company.—The recovery which began directly hostilities ceased was strongly maintained in 1946, and gas sales increased by 18.53% over 1945. Gross profit transferred to net revenue was £44,408, compared with £41,276. Final dividends making 5% on the "A" Ordinary stock, and 3½% on the "B" Ordinary stock, have been declared, leaving a balance of £5,727 to be applied to the further reduction of the net revenue deficiency suspense account. This transfer reduces the amount outstanding by nearly one-third, namely, from £18,513 to £12,786.

Swansea Gas Light Company.—With the payment of a final dividend of 2½% the total dividend for the year ended Dec. 31 is 4½% against 3½% for the previous year. The balance carried to profit and loss account for the year is £47,353, compared with £48,850, and the amount carried forward, subject to payment of dividends, is £34,552, against £33,103 brought in. Gas sales, at 3,559,747 therms, yielded £217,400, compared with £203,825 for 1945, when 3,486,422 therms were sold. As far as difficulties of manpower and of materials have permitted, the works, plant, and mains of the Company have been well maintained.

Sunderland Gas Company.—The balance carried to net revenue account for the year ended Dec. 31 is £21,044, compared with £18,724 for the previous year. After deducting interim dividend there is an available balance of £28,649, out of which the Directors recommend payment of a final dividend of 3%, making 6% for the year, the same as for 1945, leaving £18,679 to be carried forward. Gas made during the year amounted to 6,714,714 therms, against 5,225,627 therms for the previous year, and gas purchased totalled 4,675,210 therms, against 4,752,800 therms. Gas sent out for the year reached a new high level, being 14% greater than in 1945 and almost 70% above the highest pre-war output. This heavy demand for gas was met in spite of difficulties in renewing, replacing, and repairing plant. At the Hendon works additional purification plant has been installed, and the laying of mains to carry gas to new consumers on trading and housing estates continues.

Oxford and District Gas Company.—A final Consolidated Ordinary dividend of 5%, making 10% for the year (same), was declared on Feb. 21. The profit for the year, at £46,608, was £3,523 more than in 1945, and the amount carried forward is increased by £3,043 to £20,428. Gas sales reached a new high level of 1,903 million cu.ft., an increase of 3.35% over the previous year and more than 50% on 1938. The maximum, daily output approached 8,000,000 cu.ft., which is the limit of the capacity of the present works. Additional capital of £89,901, including net premiums, was raised during the year by the issue of £39,978 of 4% Redeemable Preference stock and £49,000 of 3½% Redeemable Debenture stock, in spite of which the capital account is overspent by £140,752, of which £114,888 represents expenditure during 1946, mostly on new mains. The Chairman, Mr. H. M. Lodge, reported that many miles of mains and services had been laid during the year in connexion with new housing estates, and 675 new consumers were added. Demand for appliances was still far in excess of supply, though no fewer than 2,000 new appliances were installed. The price of gas remained at its low level, notwithstanding further increases in wages and costs of coal and other materials.

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Publications Received.

A new booklet describing Watson House has been issued by the Gas Light and Coke Company. Produced for the non-technical reader in everyday language it has sections devoted to the cooker, water heating, space heating, coke, testing, meter, research, photometric, and industrial laboratories, the workshops, and the industrial appliance showroom and demonstration room. Intended presumably to act as a guide-cum-memento for visitors, the booklet describes the purpose of each department, the methods employed, and the results obtained, and explains the important function of Watson House in its concluding words: "Developments come, but the painstaking work of the men behind the scenes prevents immature and unworthy developments from being sold to the public." Particular mention must be made of the admirable photographs.

Gas Stocks and Shares

With the exception of Imperial Continental Capital stock, which advanced from 118-123 to 120-125, all the changes in the gas stock market in London last week were in a downward direction. In the provinces, however, Bristol 5% Maximum advanced two points, and Hartlepool Gas and Water Company gained 1½ to 102½-104½. The following were the price changes during the week :

PROVINCIAL EXCHANGES.

Bristol 5 p.c. max....	107	—112	+ 2
Hartlepool Gas and Water Corp.	102½	—104½	+ 1½

OFFICIAL LIST

Bristol Capital stock	108	—113	— 2
East Surrey 5 p.c. irred. deb. ...	118	—123	— 2
Gas Light and Coke ord.	21/6	— 22/6	— 6d.
Do. 3½ p.c. Max.	83	— 88	— 1
Do. 3½ p.c. red. pref. ...	98	—101	— 1
Imperial Continental cap. ...	120	—125	+ 2
Mid. Southern Utility 4 p.c. cons. pref.	98	—103	— 1
South Eastern Gas Corp. 4 p.c. pref.	19	— 21/-	— 6d.
South Metropolitan Ord. ...	92	— 95	— ½
Do. 4 p.c. irred. pref. ...	98	—103	— 1
South Suburban 5 p.c. pref. ...	105	—110	— 1
Do. 4 p.c. pref.	98	—103	— 1
Swansea 5½ p.c. red. pref. ...	100	—105	— 2
United Kingdom Gas Corp. ord.	20/6	— 22/6	— 6d.
Wandsworth pref....	98	—103	— 1

Gas Products Prices

The London Market

Mar. 21.

There are no changes to report in the prices of Coal Tar products.

The Provinces

March 24.

Average prices for gas-works products: Pitch, 75s. per ton; toluole, naked, North, 90's, 2s. 4d. to 2s. 6¾d. per gall.; pure, 3s. 2¾d. Prices for carbolic acid 60's anthracene, creosote oil (hydrogenation), coal tar oils (timber preservation, &c.) and strained anthracene oil are controlled by Government Orders. Prices for road tar are increased by one penny per gall. by S. R. & O. 1947, 177, under which Order there are also increases in the prices of naphthalene.

Scotland

Mar. 22.

Demand for all products continues to exceed supply.

*Refined Tar.** Yield to the distiller is 6d. per gall. ex works, naked. *Creosote Oil.* Timber preserving quality* 5½d. to 6½d. per gall. ; Hydrogenation Oil* 5¾d. per gall.; Low Gravity or Virgin Oil† 7¼d. to 7½d. per gall.; Benzol Absorbing Oil 6½d. to 8d. per gall. *Refined Cresylic Acid* is 3s. 6d. to 4s. 6d. per gall. ex works, naked, according to quality. *Crude Naphtha*† 7d. to 8d. per gall. *Solvent Naphtha.** Basic maximum prices delivered in bulk 90/160 grade, 2s. 10d. per gall., and 90/190 Heavy Naphtha, unrectified, 2s. 0½d. per gall.; Rectified, 2s. 4d. per gall. *Pyridine.*† 90/160 grade 15s. per gall., and 90/140 grade 17s. per gall.

* Price controlled. † Uncontrolled.

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